WILDLIFE REVIEW

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NUMBER 97 JANUARY 1960

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

WILDLIFE REVIEW

An abstracting service for wildlife management
Issued for the information of cooperators
by the Fish and Wildlife Service
United States Department of the Interior

January 1960 Patuxent Wildlife Research Center, Laurel, Maryland No. 97

The printing of this publication has been approved
by the Director of the Bureau of the Budget, August 13, 1957.

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

NATURAL RESOURCES & CLIMATE

Allen, Shirley Walter. CONSERVING NATURAL RESOURCES. Second edition. McGraw-Hill, New York 18, N. Y. 370 p., illus. 1959. $6.75. [From review by J. V. K. Wagar, J. For. 57(7).]

The first edition was good and this one is better. It has the unity and compactness that is possible when one man writes a whole book. Yet it has much of the profundity and breadth that is sought through multiple authorship. Chapters are: 1. Introduction. 2. The Land, the Soil, and Conservation. 3. Water and the Atmosphere. 4. Forests, Grazing, and Recreation. 5. Wild-Animal Resources. 6. Mineral Resources. 7. Human Powers and Natural Resources. Teachers who adopt this text may receive gratis the paper Suggestions to Teachers for the Use of Conserving Natural Resources, which helps adapt the text to courses of different lengths. Allen accents conservation through organizations more than he does conservation by individuals. Increasing, overlapping demands for space that torment land managers are emphasized. The slow and cautious machinery of democracy and its advantages and responsibilities thread through the book. On the whole, the book reveals an impressive attention to changes of recent years, and it incorporates an accuracy that few individuals could equal.

Thornthwaite, C. W., John R. Mather, and Douglas B. Carter. 3 WATER BALANCE MAPS OF EASTERN NORTH AMERICA. Resources for the Future, Inc. iii + 47 p., 4 figs. + 3 folded colored maps (21 x 29 in.). Nov. 1958. $2.00.

The three maps of eastern North America (Me. and James Bay west to the 96th meridian) depict annual values of potential evapotranspiration, water surplus and water deficit. These values are based upon information obtained from about 2,500 climatological stations. The accompanying text describes methods of measuring evapotranspiration, and computing water balance. Areal differences and yearly fluctuations in water balance are discussed.--Paul F. Springer.

Webster, Gary. (= Webb B. Garrison, McKendree Coll., Lebanon, Ill.) CODFISH, CATS AND CIVILIZATION. Doubleday & Co., Garden City, N. Y. 263 p. 1959. $3.95.

A popular account of the interactions of man and other animals from prehistoric times to the present. Anecdotes and facts are interspersed to provide interesting reading. Wildlifers should find the chapters on the starling, Norway rat, bison, wolf, bear, and rabbit informative. There is a gripping account of the century since the introduction of the rabbit to Australia. Webster traces the history of rabbit control from "rabbit proof" fences to viruses that induce myxomatosis. He mentions reductions in the magnitude of 96% for rabbits in Australia, but to use his words "...in spite of a smashing victory at the mid-point of the twentieth century, man has by no means exterminated his nibbling foe... Given a few generations, changes in rabbits or virus could reduce the mortality rate--and resistant bunnies could multiply to regain their old status. After all, rabbits have been around for quite a while..." Man is a biological youngster who has been on the scene a relatively short time.

SOILS

Bourne, W. C., and others. SOIL SURVEY OF BITTERROOT VALLEY AREA, MONTANA. US Soil Cons. Serv., Ser. 1951, no. 4. v + 128 p., 12 figs. + colored, single-fold maps bound in. May 1959. Sold by Supt. Documents.

Elder, Joe A., and others. SOIL SURVEY OF BLOUNT COUNTY, TENNESSEE. US Soil Cons. Serv., Ser. 1953, no. 7. 1-119 p., 6 figs. + large single-fold maps based on aerial photos. July 1959. Sold by Supt. Documents.

Henry, Elvin F., and others. SOIL SURVEY OF NORFOLK COUNTY, VIRGINIA. US Soil Cons. Serv., Ser. 1953, no. 5. i + 53 p., illus. + large single-fold maps based on aerial photos and bound in. May 1959. Sold by Supt. Documents.

Mowery, Irvin C., and others. SOIL SURVEY OF LYNN COUNTY, TEXAS. US Soil Cons. Serv., Ser. 1953, no. 3. i + 37 p., 10 figs. + single-fold maps based on aerial photos and bound in. Mar. 1959. Sold by Supt. Documents.

SOILS--Continued

Overton, Joseph R., and others. SOIL SURVEY OF LAWRENCE COUNTY, TENNESSEE. US Soil Cons. Serv., Ser. 1952, no. 6. iii + 61 p., illus. + single-fold maps based on aerial photos and bound in. June 1959. Sold by Supt. Documents.

Robinson, Glenn H., and others. SOIL SURVEY OF RICHLAND COUNTY, WISCONSIN. US Soil Cons. Serv., Ser. 1949, no. 9. ii + 42 p., 9 figs. + large, colored single-fold maps bound in. March 1959. Sold by Supt. Documents.

Taylor, David C., and others. SOIL SURVEY OF PRESTON COUNTY, WEST VIRGINIA. US Soil Cons. Serv., Ser. 1954, no. 3. ii + 49 p., 8 figs. + single-fold maps based on aerial photos and bound in. Aug. 1959. Sold by Supt. Documents.

Ulrich, H. P., and others. SOIL SURVEY OF TIPPECANOE COUNTY, INDIANA. US Soil Cons. Serv., Ser. 1940, no. 22. iii + 117 p., 14 figs. + large single-fold maps. Jan. 1959. Sold by Supt. Documents.

Wilson, Lemoyne, and others. SOIL SURVEY OF EAST MILLARD AREA, UTAH. US Soil Cons. Serv., Ser. 1944, no. 11. iii + 101 p., 11 figs. + large single-fold maps. June 1959. Sold by Supt. Documents.

CONSERVATION EDUCATION

Bogert, Charles M. (Am. Mus. Nat. Hist., N. Y. 24, N. Y.) RECORDING THE SOUNDS OF NATURE. Natural History 68(7): 362, 364, 366, 368, 416, 418. Aug.-Sept. 1959.

An account of the various nature phonograph records. Appended is a classified list of 31 foreign and domestic albums which are available. Recordings are available of amphibian, insect and bird songs.

Hamnett, Wm. L. (N. C. Wildl. Res. Comm., Raleigh.) 4-H WILDLIFE CONSERVATION MANUAL. N. C. Agr. Ext. Serv., (Revised) Club Series no. 61. 15 p., illus. Nov. 1958.

This manual includes 11 work units on conservation for 4-H-ers. These range from projects such as habitat improvement and planting wildlife food patches, to ones on fur animal trapping and erecting nesting boxes and feeders.

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

National Wildlife Federation. 1959 CONSERVATION DIRECTORY / A LISTING OF ORGANIZATIONS AND OFFICIALS CONCERNED WITH NATURAL RESOURCES. Natl. Wildl. Fed., 232 Carroll St. NW., Washington 12, D. C. (After Jan. 1960: 1412 16th St. NW., Washington 6, D. C.) vii + 116 p. July 1959. 50¢.

A new edition of a time-tested publication which has proved to be a valuable working tool of the conservationist.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Blomquist, H. L., and H. J. Oosting. (Duke U., Durham, N. C.) A GUIDE TO THE SPRING AND EARLY SUMMER FLORA OF THE PIEDMONT, NORTH CAROLINA. 6th rev. ed. xix + 181 p. Published by authors. 1959. $2.00. [From Biol. Abst. 33(9).]

Brown, Clair A. (La. State U., Baton Rouge.) VEGETATION OF THE OUTER BANKS OF NORTH CAROLINA. La. State U. Press, La. State U. Studies, Coastal Studies Series no. 4. x + 179 p., 50 figs., 4 pls. 1959. [Formerly published (1957) in limited editions as: Botanical Reconnaissance of the Outer Banks of North Carolina. Coastal Studies Institute, La. State U., Tech. Rep. No. 8, Part C.]

A vegetative survey of the habitats (sea beach, dune, sand flat, tidal marsh, and pond) of the Outer Banks of N. C. Sand fencing which was constructed in 1936-40 has been very effective in establishing barrier dunes along the beach. Grasses, planted in connection with the dune construction, have served to still much of the shifting sand. This brought about an unexpected and rapid invasion of the sand by many native plants. Some of the tree planting has not been as

successful because of susceptibility to spray injury. Woody plants adapted to this area are: live oak, yaupon, wax myrtles, silverling and marsh elder. An annotated list of plants observed on the Outer Banks is appended. The flora is composed of some 95 families, 273 spp. plus some 36 entries in which field identifications were not positive.

Dansereau, Pierre, and Marcel Raymond. (Institut Botanique de l'Université de Montreal, Canada.) GUIDE SOMMAIRE POUR LES EXCURSIONS AUX ENVIRONS DE MONTREAL, PENDANT LE IX^{e} CONGRES INTERNATIONAL DE BOTANIQUE. Sarracenia no. 2. 1-22 p. Aug. 1959.
In French. In addition to being a summary guide for field trips near Montreal, this publication lists the plants and associations of plants found and has notes on the geology and climate of this area.

Davidson, Robert Austin. THE VASCULAR FLORA OF SOUTHEASTERN IOWA. State U. Iowa Studies in Nat. Hist. 20(2). 102 p., 5 pls. 1959.
Annotated list as to relative abundance, habitat and soil preferences of 1,005 native and 247 introduced spp. of vascular plants found in se. Iowa.

Harlow, Wm. M. (Coll. For., State U. of N. Y., Syracuse.) FRUIT KEY AND TWIG KEY TO TREES AND SHRUBS. FRUIT KEY TO NORTHEASTERN TREES: TWIG KEY TO THE DECIDUOUS WOODY PLANTS OF EASTERN NORTH AMERICA. Dover Publ., Inc., N. Y. 18. xvii + 126 p., illus. 1959. $1.25, paper.
An unabridged and unaltered republication of the 1st edition of the fruit key, and the 4th revised edition of the twig key. These handy field aids are now bound as one. Pagination is the same as in the original publications. Although this is paperbound, it should withstand field use, since the pages are sewn in signatures and good quality paper is used.

Massey, A. B. (Va. Poly. Inst., Blacksburg.) GRAMINEAE IN VIRGINIA / AN ANNOTATED LISTING OF THE SPECIES AS OCCURRING IN VIRGINIA. Va. Coop. Wildl. Res. Unit, Va. Poly. Inst. 25 p. + map. May 1959.
Distribution of Va. grasses by counties, physiographic regions and habitats.

Massey, A. B. (Va. Poly. Inst., Blacksburg.) GRASS IDENTIFICATION / A SYSTEM FOR THE RECOGNITION OF 67 OF THE MORE COMMON GRASSES OF FARM AND HOME. Va. Coop. Wildl. Res. Unit, Va. Poly. Inst. 10 p. + plate. (1959.)
Key based on vegetative structures of the common grasses of Va.

Monk, Carl D. THE VEGETATION OF THE WILLIAM L. HUTCHESON MEMORIAL FOREST, NEW JERSEY. Ph.D. thesis, Rutgers U. 113 p. 1959. [From long abstract in Dissertation Abstracts 20(1).]
The William L. Hutcheson Memorial Forest, a 65-acre mature oak forest that has had a minimum of human influence was divided into 8 communities based on pattern of shrub distribution. The dominant oaks contribute about 75% to total basal area. The important successful canopy transgressives are sugar maple and Norway maple, two species that have only a few established seed-trees in the woods at the present time. This leads to the conclusion that the shade tolerant maples are gaining in importance at the expense of the oaks. This apparent shift seems to be in response to the cessation of fire and an increase in urbanization.

Phillips Petroleum Co. PASTURE AND RANGE PLANTS. SEC. 5, INTRODUCED GRASSES AND LEGUMES. 26 p., illus. in color. 1958. Available on request from Sales Dept., Phillips Petroleum Co., 80 Broadway, N. Y. 5, N. Y.
Another section of the beautifully illustrated series of pamphlets prepared with the aid of specialists and artists--earlier sections reviewed in WR 91: 7. Advertising is held to a minimum and is distinct from text. Each species is shown by a large color picture, often with inset of an enlarged detail. Characteristics, importance and management of 28 introduced species of pasture plants.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY--Continued

Stanton, Frank W. (5920 SW. 18th Drive, Portland, Ore.) KEY TO SOME IMPORTANT AQUATIC PLANTS OF OREGON. Ore. State Game Comm. (Portland), Misc. Wildl. Publ. no. 2. ii + 10 p., 16 figs. on 4 pls. 1957.
Two keys are presented of the aquatic plants of Ore.; a general key to important aquatics and a special key covering Scirpus.

PLANTS--FOREST SURVEYS

Thornton, P. L., and J. T. Morgan. THE FOREST RESOURCES OF IOWA. U. S. For. Serv., Central States For. Exp. Sta. (Columbus, Ohio), For. Serv. Release no. 22. 46 p., illus. 1959. [From J. For. 57(7).]

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Collins, Henry Hill, Jr. COMPLETE FIELD GUIDE TO AMERICAN WILDLIFE / EAST, CENTRAL AND NORTH. Harper & Bros., N. Y. xix + 683 p., 200 figs., 48 col. pls. + unnumbered maps. 1959. $6.95.
This pioneer regional handbook of wildlife is designed to be an authoritative field guide for rapid identification of all vertebrate species and a large selection of marine invertebrates of NA "east of the Rockies and north of the 37th parallel." The author, effectively assisted by an editorial board of 4 specialists, has produced a concisely documented and readily usable volume. This is more than an identification manual since it contains, in capsule form, information on the natural history, habits, voice, food, reproduction, habitat, distribution and even the geological ancestry of the 1,422 species treated. Observations on the conservation, ecology and history of these wildlife forms are also included. Although it is profusely illustrated ("over 2000 illustrations") the colored plates, especially of the birds, are mediocre. Too many are poor in color fidelity or are lacking in accurate individuality. The feature of including a sketch of the egg alongside each colored bird portrait is good. Another useful innovation is a tabular and spot index system adapted to locating the sections of the major animal groups without referring to the standard index. The 788 range maps show distribution at a glance and define--for migratory species--the summer and winter ranges. Inclusion of some reference to scale in the figures and the exclusion of the word "complete" in the title would probably make serious workers using the book much happier. This important new handbook should prove very useful to amateur naturalists at all levels and to professional biologists in the field. It's convenient size and vast field of coverage should make it the one book which every field biologist carries.--John S. Webb.

Edmondson, W. T., editor. WARD & WHIPPLE'S FRESH-WATER BIOLOGY. 2d ed. John Wiley & Sons, Inc., N. Y. xx + 1248 p., 1951 figs. 1959. $34.50.
The revised and rewritten edition of "Ward & Whipple" will be welcomed by anyone active in limnology and related fields. Its scope has been increased considerably and its taxonomy has been brought up to date. Actually it is neither a text nor merely a reference work--it is a reasonably complete library of boiled down un-padded working knowledge in this field. As such, it is almost essential for field workers in any type of aquatic biology. A comparison of the two editions reflects the progress made in biology during the half century between editions. The 1918 edition was written by 27 experts and included trematodes, spiders and aquatic vertebrates. These groups have been removed in the present edition and others (fungi, tardigrades and polychaetes) have been added; while bacteria and vascular plants have been given considerably more detailed treatment. The revised edition is the work of almost twice as many authors and contains half again more chapters as the earlier one. There has been an almost complete turnover of specialists--only two of the original collaborators are authors for this edition. The increase in text material is tremendous--but size limits have been maintained by skillful printing technology In the Rotifera ("Rotatoria" in 1918), for example, there are 187 references compressed into 4.5 pages in the revised edition, contrasted with the 0.5 pages in the earlier edition which contained 1/17 as many references. The use of the Chemical Abstracts system in the abbreviation of journal titles is to be commended and should be influential in the standardizing of citations in biology

and chemistry. Differences in treatment of the groups are evident. Some omissions are difficult to explain. The admitted partial coverage of vascular plants will greatly restrict the value of this section of the book for persons working in wetland ecology. Although the commonest species are said to be included, members of such important families as the cattails, grasses, sedges and rushes are not mentioned. According to the preface, "this book is intended for a wide audience." But even in these days of inflation the price seems high, and copies will probably be found in libraries and other institutions rather than part of the personal field equipment of the biologists for whom it was designed. One can rationalize, however, that the book is an investment in knowledge and is a library which contains the findings and judgments of half a hundred specialists in limnology.--Compiled from reviews by Gordon Clark, Robert T. Mitchell, A. L. Nelson, Paul Springer, and others.

Hubbs, Carl L., editor. ZOOGEOGRAPHY. A SYMPOSIUM... Am. Assn. for the Advancement of Sci., Wash. 5, D. C. 420 p., illus. 1959. $12.00. [From Biol. Abst. 33(11).]

Seventeen papers from 2 symposia, The Origins and Affinities of the Land and Freshwater Fauna of Western North America (14 papers) and The Geographic Distribution of Contemporary Organisms (3 papers), are included in this volume. The following should be of special interest to wildlifers: The role of physiology in the distribution of terrestrial vertebrates, by George A. Bartholomew; Evidence from fossil land mammals on the origin and affinities of western nearctic fauna, by Donnald E. Savage; The history and affinities of the recent land mammals of western North America, by William H. Burt; Origin and affinities of the birds of western North America, by Alden H. Miller; Origin and affinities of the present western North American reptile and amphibian fauna (abstract), by Robert C. Stebbins; Evolution of a coast range corridor in California and its effect on the origin and dispersal of living amphibians and reptiles, by Frank E. Peabody and Jay M. Savage; Origin and affinities of the freshwater fish fauna of western North America, by Robert Rush Miller; Distributional patterns of vertebrates in the southern United States in relation to past and present environments, by W. Frank Blair; General conclusions, by Carl L. Hubbs. An author index and an index of scientific names are included.--From abst. by H.K.H.

Raun, Gerald G. (U. Texas, Austin.) TERRESTRIAL AND AQUATIC VERTEBRATES OF A MOIST, RELICT AREA IN CENTRAL TEXAS. Texas J. Sci. 11(2): 158-171. June 1959.

A survey of the 88 spp. of vertebrates exclusive of birds found in 4 ecological communities in the Ottine marshes of Gonzales County, Texas. The zoogeographic relationships are considered for this fauna: 40 eastern forms, 16 western, 18 widespread, 7 southern, 5 Texan, and 2 are exotics.

Riney, Thane, J. S. Watson, C. Bassett, E. G. Turbott, and W. E. Howard. (c/o Natl. Mus., P. O. Box 240, Bulawayo, Southern Rhodesia.) LAKE MONK EXPEDITION / AN ECOLOGICAL STUDY IN SOUTHERN FIORDLAND. N. Z. Dept. Sci. and Indus. Res., Bul. 135. 75 p., 37 figs. 1959. Price 8s. 6d.

A study of the interrelations of birds and mammals, particularly deer with the vegetation in Fiordland National Park [South Island, N. Z.]. The main plant components of each vegetation type are described. Mice and stoats are the only small mammals in the area. A list of birds (annotated as to distribution and feeding habits) is included. Red deer are thought to have reached the area about 1920, and to have reached a peak population between 1943 and 1950, and have since declined. Unusually low ratios were found--50 adult ♂♂ : 35 fawns : 100 ♀♀. The deer were all in very poor condition. [Three classes of condition are recognized based upon the general appearance of the hindquarters of deer.] The amount of grazing on the fern Polystichum vestitum was strongly correlated with the density of deer feces, and could be used to provide an alternate index to deer abundance. Deer spent more time in the forests than in the open grassland. From browse studies, it is concluded that red deer provide the dominant animal influence on the vegetation and the resulting environment is relatively unfavorable to deer. In spite of changes in composition of the vegetation, the forest is in no danger of being eliminated by deer; the total vegetative cover is not decreasing, and soil erosion on the area is negligible.--From auth. summ.

WILDLIFE--NATURAL AREAS & REFUGES

Braaksma, Sj., and M. F. Mörzer Bruijns. WILDFOWL SANCTUARIES IN THE NETHERLANDS. Reprinted from VII Bul. Internat. Com. Bird Preserv. p. 65-74. 1958.

Fifty-four wildfowl sanctuaries ranging in size from 13 acres to 15,000 acres are described and mapped for the Netherlands.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Eibl-Eibesfeldt, Irenäus, and Sol Kramer. (Max-Planck-Institut für Verhaltenphysiologie, Seewiesen, Germany.) ETHOLOGY, THE COMPARATIVE STUDY OF ANIMAL BEHAVIOR. Quart. Rev. Biol. 33(3): 181-211, 8 figs. Sept. 1958.

This is a very important review paper and includes a lengthy bibliography on ethology. The works of Lorenz and Tinbergen and the author are used to develop the theory and the criticisms of Hebb, Kennedy and Lehrman are considered by Eibl-Eibesfeldt. "In summary, it may be said that ethology does not have a complete theory, but rather has contributed a considerable number of verifiable facts which do not wholly fit within existing physiological or psychological explanations of animal behavior. These are as follows: 1. Certain patterns of behavior, termed instinctive movements, possess taxonomic value among diverse groups of animals i.e., they often show the same species specificity as shown by morphological structures. 2. These fixed patterns of behavior...may be studied and...'understood' from the viewpoint of phyletic descent. They have evolved from homologous, ancestral behavior. 3. There exists an hitherto unexplained lawfulness governing behavior which is expressed through instinctive movements, leading to such associated phenomena as displacement activities, intention movements, ambivalent responses, regressive behavior, and an inherited sequence of movements."--From auth. summ.

Gerking, Shelby D. (Ind. U., Bloomington.) THE RESTRICTED MOVEMENT OF FISH POPULATIONS. Biol. Rev. of Camb. Philos. Soc. 34(2): 221-242. May 1959.

Review paper that discusses home range, territorial, and homing behavior in fishes, and also factors and cues involved. Although beyond the usual scope of WR because it deals with fishes, this paper should be of interest to anyone concerned with field biology of vertebrates.

Gray, James. HOW ANIMALS MOVE. Cambridge U. Press., N. Y. 144 p., 52 figs. 16 pls. 1959. Paperbound, $1.75.

A well-written book which has been designed to illustrate the more striking features of animal locomotion. The first chapter entitled The Machinery of Animal Movement relates animal movement to the physical principles involved. The remaining chapters describe swimming, walking, running, jumping, creeping, flying and gliding. The figures are very good and complement the text in telling just how the animals move. Some have evidently been derived from motion pictures and with the plates (many of which contain frames from motion pictures) the step-by-step process of locomotion is shown. This book was derived from a series of lectures for a juvenile audience--but the lucid explanations should delight mature readers.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Ash, J. S. PARTRIDGES APPARENTLY AFFECTED BY INDUSTRIAL CONTAMINATION. Brit. Birds 51: 241-242. 1958. [From J. Anim. Ecol. 28(1).]

"An irritant such as carcinogen is suggested as the cause of deformity in upper mandibles of 2 partridges shot near collieries in Yorkshire."

de Long, E. R. CHEMISTRY AND USES OF PESTICIDES. 2d ed. Reinhold Publ. Corp., New York. vii + 334 p., illus. 1956. $8.75. [From Biol. Abst. 33(10).

With this edition the title and scope are changed from "Insecticides" to "Pesticides," to conform with official adoption of the latter term to cover all chemicals used as pest control agents. The text is rewritten, with up-to-date information and a complete revision of chapters on organic pesticides. Pesticide tolerances established (1955) by the Food and Drug Admin. of the U. S. Dept. Health, Education and Welfare are listed; also those materials requiring

no tolerances and those with zero tolerances. A dictionary of pesticides (about 500), a glossary, tolerances for pesticide residues in or on fresh fruits and vegetables, and official antidotes are appended. The volume is indexed.--From abst. by P. V. P.

Griffin, Daude N. (Okla. State U., Stillwater.) THE POISONING OF MEADOWLARKS WITH INSECTICIDES. Wilson Bul. 71(2): 193. June 1959.

Seven eastern and western meadowlarks (Sturnella magna and S. neglecta) died from the effects of seeds treated with Di-Syston and Thimet. Oat and barley seeds treated with 1/4 - 1/2 lb. of Di-Syston and 1/4 - 1/2 lb. of Thimet per 100 lb. of seed. The birds recovered scattered grain from the top of the ground and had dug up treated seeds which had been planted. These two insecticides have an accumulative effect and are highly toxic to vertebrates. Indications are that unless extreme care is used when applying these chemicals very high bird mortality can be expected.

Howard, W. E., R. L. Fenner, and H. E. Childs, Jr. (U. Calif., Davis.) WILDLIFE SURVIVAL IN BRUSH BURNS. J. Range Mgt. 12(5): 230-234, 3 figs. Sept. 1959.

From summ. Information on wildlife survival of prescribed brushland fires was obtained by 3 methods: (1) rodents and snakes in cages with temperature recording devices were placed in different habitat situations and the area was control burned; (2) pre and post burn censuses were made of birds and mammals drinking from a spring; and (3) the behavior of wild animals was observed from an observation point within the fire. The cage temperature lethal to rodents was between 138-145° F. Results indicate there was slight chance that wild vertebrate animals would get caught in a situation that would lead to their death during such fires. Most spp. of vertebrates benefit from control burns because of the resultant improved habitat.

Laird, M. A SECONDARY EFFECT OF DDT UPON THE AQUATIC MICROFLORA AND MICROFAUNA. Can. J. Microbiol. 4(5): 445-452. 1958. [From Mosquito News 19(2).]

Negherbon, Wm. O. (Loyola Coll., Baltimore, Md.) HANDBOOK OF TOXICOLOGY. VOLUME III: INSECTICIDES / A COMPENDIUM. W. B. Saunders Co., Philadelphia and London. xxv + 854 p. 1959. $14.00, paper.

This mammoth volume of 8.5 x 11 x 1.75 inches was prepared under direction of the Committee on the Handbook of Biological Data, National Academy of Sciences, under subsidy from the U. S. Air Force. The author spent more than 3 years on the job. He has produced a vast, detailed volume whose masses of tables and text in fine print are most impressive. Every technical man concerned with effects of insecticides on insects, laboratory animals, or wild animals will want this reference at hand. In plan, 188 chemicals, groups of chemicals, and a few general subjects (e.g., bees vs. insecticides, repellents, synergists) are treated systematically. The general nature and chemistry of each chemical is discussed concisely, then toxicological data derived from laboratory and field tests on many kinds of animals are presented in detail, with sources indicated. Important, well-known chemicals take up 10-20 pages apiece and DDT has 38 pages. The data provided are of great value, and so are the 3404 references cited. Unfortunately for wildlife biologists, the book was not prepared from the wildlife point of view or with wildlife literature in mind. Thus wildlife effects are reported insofar as they were reported in chemical and pesticide literature, but there is not a single bibliographic entry for such workers as Springer, Ryckman, Rudd, Herald, George, or Eng. The resultant omissions are extremely serious from our standpoint. The volume has impressive indices to species and chemicals, but neither quail nor pheasant is indexed under either common or scientific name, although they are mentioned in various sections of the text. In summary, wildlife biologists will find this book extremely useful for certain purposes, but they will have to consult many other sources (especially Rudd and Genelly) for data on pesticides vs. wildlife. --W. H. Stickel.

von Horn, A. ÜBER DIE WIRKUNG VON PFLANZENSCHUTZMITTELN AUF GEFLÜGEL UND WILD, VERSUCHE AN HÜHNERKÜKEN. [THE EFFECTS OF PESTICIDES ON GAME BIRDS AND MAMMALS, STUDIES ON DOMESTIC CHICKS.] Nachrichtenbl. Deutsch. Pflanzenschutzd. (Braunschweig) 9: 138-143. 1957. [From abst. by Xylander in Z. Jagdwissensch. 4(1), 1958.]

In German. The results of experiments using E605f, Raphatox-Pulver, Toxaphene and Largacide. Normal application by spraying on grass and 14 day chicks in pens had no noticeable effects. With massive application of Toxaphene and Largacide, mortality occurred. None of these agents had any repellent effects. Conclusion is that little possibility exists for harm to domestic animals and small game by normal use of these materials.--V. F. Flyger.

von Horn, A. ÜBER DIE REPELLENTWIRKUNG VON PFLANZENSCHUTZMITTELN AUF WILD. VERSUCHE AN WILDKANINCHEN IN FREIER WILDBAHN. [REPELLENT EFFECT OF PESTICIDES UPON WILD ANIMALS. FIELD STUDIES ON WILD RABBITS.] Z. Jagdwissensch. 4(2): 84-93. 1958.

In German with summaries in French and English. Of the pesticides tested, only Toxaphene and Endrin had any repellent effect after 24 hours. These repelled rabbits and roe deer up to 7 days after application.--V. F. Flyger.

Wallace, George J. (Mich. State U., E. Lansing.) SOME BIOLOGICAL EFFECTS OF INSECTICIDES ON NON-TARGET ORGANISMS. Carolina Tips 22(8): 29-31, 2 figs. Oct. 1959.

In this survey of the effects of pesticides on our natural fauna, there is an arbitrary classification into four categories with illustrative examples for each: (1) direct or immediate kills, (2) indirect losses due to food shortages, (3) long term storage of residues in plant and animal tissues and (4) physiological effects of sub-lethal doses on metabolism and reproduction.

Webb, F. E. (Federal Dept. Agr., Fredericton, N. B.) AERIAL CHEMICAL CONTROL OF FOREST INSECTS WITH REFERENCE TO THE CANADIAN SITUATION. Can. Fish Culturist 24: 3-16, 4 figs. Feb. 1959.

Highlights of the large-scale forest spraying of DDT in Canada for the period 1945-57. DDT was used in 0.5 - 2.0 lb. per acre dosages in the control of hemlock loopers, spruce budworm and black-headed budworm. Program has increased over 100-fold since 1945 when 64,000 acres were treated--in 1957, the acreage treated for spruce budworm was 6,500,000 acres and 156,000 acres for black-headed budworm control. Dosages of 1 lb./acre yielded 99% control of spruce budworm, while the 0.5 lb./acre dosage effected 80-100% control of this insect. Some discussion on the effects on fish and wildlife is included and the conclusion drawn is that in the dosages used there are no serious adverse effects directly or indirectly upon warm-blooded animals.

World Health Organization. BIBLIOGRAPHY OF PESTICIDES TOXICITY AND ACCIDENTAL POISONING. WHO/Insect./90. 9 p. 1959. [From Mosquito News 19(2).]

WILDLIFE--PARASITES & DISEASES

Beck, John R. (Branch of Predator & Rodent Control, US F&WS, Columbus, Ohio.) DISEASES CARRIED BY MAMMALS AND BIRDS. Pest Control 27(8): 14, 16-19. Aug. 1959.

The transmission of human diseases by birds and mammals has received considerable study and attention, particularly during the last 5 years. This paper is an attempt to disseminate to the public some of the technical knowledge gained. Coverage in this paper is of the most common diseases as they occur in the most important animal spp. Sections on transmitting hosts include: Rats, House Mice, Native Rodents and Rabbits, Household Pets, Wild Predators, Bats, and Birds. Two other sections of interest are entitled: Personal Safety Precautions, and Implications to Civil and National Defense. A summary table is provided of diseases, causative organisms, important carriers and treatment available.

Bürgisser, H., R. Fankhauser, K. Klingler, and P. A. Schneider. CONTRIBUTIONS TO THE NEUROPATHOLOGY OF WILD ANIMALS. Schweiz. Arch. Tierheilk. 101(3): 112-132. 1959. [From Biol. Abst. 34(2).]

Histological examination of the brains of 500 wild animals (403 mammals, 97 birds) showed pathological lesions in 99 cases. In a group of 400 animals there was 17% incidence according to the following distribution: roe, 26%; hare, 20%; bird, 9%; chamois, 8%; field mouse, 7.5%. Among the remaining 100, a certain selection had taken place according to clinical symptoms. The incidence of lesions is therefore higher, at 30%. The most frequent lesions were inflammatory processes, meningitis and encephalitis (mostly concurrent) of various types.--From abst. by MDS.

Clifford, Carleton Merritt, Jr. STUDIES ON LARVAL TICKS OF THE FAMILY IXODIDAE WITH SPECIAL REFERENCE TO THOSE SPECIES OCCURRING IN THE SOUTHEASTERN UNITED STATES. Ph.D. thesis, U. Md. 193 p. 1958.

The morphology of 52 spp. of larval ticks (Ixodidae) was studied to determine the value of certain features as taxonomic characters both at the generic and the specific level.

Mohr, Carl O. (Ill. Nat. Hist. Surv., Urbana.) A PROCEDURE FOR DELAYED COLLECTING OF ECTOPARASITES FROM SMALL CAPTURED HOSTS. J. Parasitol. 45(2): 154. 1959. [From Biol. Abst. 33(10).]

Embalming by use of formaldehyde, wrapping in cloth and examination at convenience, are described. Some studies require that ectoparasites that already were dead on the host be distinguished from those alive at the time of its capture.--Author.

Strandtmann, R. W., and G. W. Wharton. A MANUAL OF MESOSTIGMATID MITES PARASITIC ON VERTEBRATES. Inst. Acarology, Dept. Zool., U. Md. Contrib. no. 4. xi + 330 p., mimeo., 96 figs. on 69 pls. Dec. 1958. $7.50, paper.

A condensation of information through 1956 on biology, anatomy, distribution, life history and medical and economic importance of these mites. A synopsis includes 13 families, 3 subfamilies, 83 genera and 590 species. Taxonomic keys, distribution lists and host lists are included, and methods of collecting, mounting and culturing these mites are described. Bibliography includes about 900 titles. Included among the host animals are several wild birds (English sparrows, starlings and common pigeons). Ducks and geese are parasitized by nasal mites of this group, but apparently the galliform birds are not. Mammals and reptiles of many species are included as hosts.

WILDLIFE--POPULATIONS & FLUCTUATIONS

Brüll, Heinz. JAGDLICHE FORSCHUNG AUF LANDSCHAFTSBIOLOGISCHER GRUNDLAGE. [WILDLIFE RESEARCH ON THE BASIS OF AREA REQUIREMENTS.] Z. Jagdwissensch. 4(4): 146-150, 2 figs. Dec. 1958.

In German with summaries in English and French. The ecology of animals related to movements (home range), food requirements and reproduction determines what the hunter can harvest.--V. F. Flyger.

Ratcliffe, F. N. (C.S.I.R.O., Canberra, Australia.) FACTORS INVOLVED IN THE REGULATION OF MAMMAL AND BIRD POPULATIONS. Australian J. Sci. 21(5a): P79-P87. Dec. 1958.

Consists largely of a tribute to the work of Errington on muskrat and Pitelka's work on the lemming. Ratcliffe sums up Errington's conclusions on the population ecology of the muskrat succinctly: The muskrat limits its own population by a combination of territorialism and intra-specific intolerance, the mink and other predators providing an ever-present disposal service for the surplus.

Thompson, J. L. Cloudsley. SOME COMMENTS ON THE NATURAL CONTROL OF ANIMAL POPULATIONS WITH ESPECIAL REFERENCE TO INSECTS. Entomologist 90: 195-203. 1957. [From J. Anim. Ecol. 28(1).]

"It is concluded from this discussion of the existing theories and opinions regarding the natural regulations of animal populations that restrictions by territory, suitable nesting sites, and shelters are probably the most important density-dependent factors controlling larger animals, whereas insect populations are probably more frequently checked by natural enemies and the importance of food shortage in regulating them has in most cases been exaggerated."

WILDLIFE--BIOMETRICS

Abramson, Norman, and Joyce Tolladay. (Marine Resources Operations, Calif. Dept. Fish & Game.) THE USE OF PROBABILITY SAMPLING FOR ESTIMATING ANNUAL NUMBER OF ANGLER DAYS. Calif. Fish & Game 45(4): 303-311. Oct. 1959.

Describes the results of three sampling plans: simple random and stratified random with proportional and optimum allocation. Sample sizes were computed for the three methods under specified criteria. An interesting application of standard procedures found in Cochran, W. G. 1953. Sampling techniques, John Wiley and Sons. The procedures followed are easily extended to game kill statistics and it is amazing that comparisons of this type have not been made. --V. Schultz.

Chapman, D. G. (U. Wash., Seattle.) THE ANALYSIS OF A CATCH CURVE. Biometrics 15(3): 489. Sept. 1959.

The age distribution of a random sample from a stable animal population provides information on the mortality rates of the population. In this paper the maximum likelihood estimates of the mortality rate and its asymptotic variance are given. The assumptions underlying the more usual regression estimate are studied critically. If the population is not stable and in particular if the recruitment varies over time, the estimates of mortality rates are biased. The nature of this bias is studied for various possible situations. Finally, it is shown that the estimation of the components of mortality due to natural causes and exploitation by a regression of catch per unit of effort on effort can also be applied to a single catch curve. The procedure is dependent on the assumption of constant recruitment but otherwise has several advantages over the standard application of the procedure to a series of catch per unit of effort data.--Author's abst. supplied by V. Schultz.

Cox, D. R. PLANNING OF EXPERIMENTS. John Wiley & Sons, N. Y. 16. 308 p. 1958. $7.50. [From Am. Sci. 47(2).]

"This book, intended for workers in the experimental sciences, describes the basic ideas underlying the statistical aspects of the design of experiments and the types of design most commonly used. Throughout, the emphasis is on planning rather than on statistical analysis of results. This limitation of scope enables the author to discuss important aspects of planning more thoroughly than other writers on the subject--the discussions of the use of supplementary observations, of randomization, and of the types of factor in factorial analysis are especially good. The writing is clear, interspersed with much shrewd and thoughtful advice on problems that arise in planning. The book can be very highly recommended as probably the best general introduction to the design of experiments now available to the non-statistician."--W. G. Cochran.

Monroe, John, and A. L. Finkner. HANDBOOK OF AREA SAMPLING. Chilton Co. (Book Division), Philadelphia, Pa. vii + 55 p. 1959.

"The purpose of this handbook is threefold: (1) to bring together the various definitions and procedures involved in the construction of an area frame, (2) to illustrate the use of the frame in drawing a random sample, and (3) to show the adaptability of the materials to several commonly used sample designs." It is concerned with a sampling procedure which has been applied to wildlife surveys (WR 68: 3, 71: 9, 76: 14, 77: 4, 80: 4, 86: 19, 87: 24).--V. Schultz.

Schultz, Vincent. (U. Md., College Park.) A CONTRIBUTION TOWARD A BIBLIOGRAPHY ON GAME KILL AND CREEL CENSUS PROCEDURES. Md. Agr. Exp. Sta., Misc. Publ. 359. 1-38 p., mimeo. 1959.

A bibliography of approximately 350 entries, emphasizing statistical procedures and planning details. A few papers on commercial fisheries harvests are included because of their "statistical nature."

Tate, Merle W., and Richard C. Clelland. NONPARAMETRIC AND SHORTCUT STATISTICS. Interstate Printers and Publishers, Inc., Danville, Ill. ix + 171 p. 1957. $3.95, paper.

The following is a small portion of an extensive review by William H. Kruskal appearing in Journal of American Statistical Association Volume 53, No. 282, pages 595-598. "This book is primarily an elementary exposition of applied nonparametric analysis for research workers in the social, biological, and medical sciences. The first third of the text proper is a general introduction to statistical inference. Some short-cut parametric techniques, mostly involving the use of sample ranges, are briefly discussed. There are 28 pages of tables and graphs. Numerous problems with real data are set, and answers or discussions for them are collected at the end of the book. Printing appears to have been done directly from typescript.

"The book, in my opinion, does not adequately fulfill its purposes, and the world still awaits an acceptable introductory textbook for applied nonparametric analysis." The reviewer continues his discussion with a justification of his opinion and lists many errors, ambiguities and omissions.--V. Schultz.

WILDLIFE--TECHNIQUES

Animal Welfare Institute. BASIC CARE OF EXPERIMENTAL ANIMALS. Revised ed. Animal Welfare Institute, 22 East 17th St., N. Y. 3, N. Y. 68 p., illus., paper. 1958.

"This edition, like its predecessor published in 1953, was prepared especially for newcomers to the important work of giving proper care and attention to animals used for experimental purposes. Its purpose is to present briefly, in non-technical language...the basic needs of the common laboratory animals and to provide practical suggestions on how to meet them." It appears to fulfill its purposes very well. Included are sections of a general nature treating the needs, housing, reproduction and breeding, disease prevention, and parasites of laboratory animals. Specific instructions on the care of 8 common laboratory mammals make up the bulk of the pamphlet. Other vertebrates and their care is described.

Jakšić, B. L. ÜBER DEN TRANSPORT LEBENDEN WILDES. [TRANSPORTING LIVE GAME.] Z. Jagdwissensch. 4(4): 208-210. Dec. 1958.

In German with summaries in English and French. Preventive measures for reducing mortality in transporting hares, partridges and deer.--V. F. Flyger.

Labisky, Ronald F. (Ill. Nat. Hist. Surv., Urbana.) NIGHT-LIGHTING: A TECHNIQUE FOR CAPTURING BIRDS AND MAMMALS. Nat. Hist. Surv. Div., Biol. Notes no. 40. 11 p., 8 figs. July 1959.

A description of the procedure, techniques and equipment developed for the night-lighting of pheasants and other animals in east-central Ill. This equipment consists of a truck-type vehicle, gasoline generator, floodlights, spotlight, and a long-handled net. "There were never nights, regardless of the weather or the behavior of the pheasants, in which night-lighting did not yield a sufficient capture of pheasants to make the operation worth while." For 1,334 pheasants handled in night-lighting operations, the mortality rate attributed to these operations was 2.4%.

Lindsley, Ogden R. (Harvard Med. Sch., Boston.) AN EASILY COPIED INK FOR GRAPHIC RECORDERS. J. Exp. Analysis Behavior 1(1): 14. 1958. [From Biol. Abst. 33(12).]

By mixing 1 part red with two parts green recorder ink, a black recorder ink is produced which photocopies very well and at the same time retains its recording properties. By adding 10 drops of Actinic Ink Concentrate to the black mixture, a recording ink is produced which is readily copied by all of the current photo- and dry-process copying methods.--MDS.

Neebe, David J., and Stephen G. Boyce. (For. Res. Center, Carbondale, Ill.) A RAPID METHOD OF ESTABLISHING PERMANENT SAMPLE PLOTS. J. For. 57(7): 507, 1 fig. July 1959.

A disk of plywood or the like is marked off into 36 ten-degree sectors. Disk has hole in center and is slipped over center stake of plot. It is then oriented by compass. Measuring tape is hooked to wire that is looped over stake and holds ends of tape at edge of disk as tape is moved about. Distance and direction to any plant is easily noted. If disk is 1.62 ft. in diameter, a milacre, doughnut-shaped plot around it has a width of just 3 ft. "Speed, simplicity, and accuracy make this a convenient method for establishing permanent plots, for sampling understory vegetation, or for establishing experimental plantings with polar coordinates."--W. H. Stickel.

Trotter, J. R. (Inst. Exp. Psych., U. Oxford, Eng.) AN AID TO FIELD OBSERVATION. Anim. Behaviour 7(1/2): 107 + 2 photos on 1 pl. Jan.-Apr. 1959.

A device that unrolls paper at a constant rate so time of observations written on the paper is recorded automatically. Mechanism is provided by an ordinary alarm clock. Details of construction and specifications are given.--L. F. Stickel.

Van Deusen, R. D. (Rt. 1, Augusta, Mich.) DEVELOPMENT OF NEW BANDS AND MARKERS FOR USE ON EXPERIMENTAL STOCK AT THE W. K. KELLOGG BIRD SANCTUARY. Modern Game Breeding 29(7): 6-7, 7 figs. July 1959.

Formerly, bands for identifying individual birds and waterfowl were made from a laminated plastic riveted to aluminum stock. A new material, Met-L-Vin (manufactured by Met-L-Wood Corporation, 6755 West 65th St., Chicago 38, Ill.), consisting of a plastic outer covering bonded to aluminum stock, makes riveting of the materials unnecessary. Do-it-yourself photos indicate the steps from sheet to band using simple tools.

Verhave, T. NEW INK FOR CUMULATIVE RECORDERS. J. Exp. Analysis Behavior 1(1): 56. 1958. [From Biol. Abst. 33(12).]

A mixture of 2 parts Varian Recorder ink and one part J. C. Higgins "Eternal Black" drawing ink is superior for use in Leeds and Northrup pens with a Gerbrands Cumulative Recorder. The ink does not clog the capillary of the pen even when the recorder is not used for 12 hours.--MDS.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Adams, Wm. H., Jr. (Ala. Coop. Wildl. Res. Unit, Auburn.) ON THE STATUS OF "WILDLIFE MANAGEMENT" AS A SCIENTIFIC PROFESSION. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 275-279. 1958 (1959).

Among findings: A minimum of 20 se. colleges offer at least one course in wildlife or conservation; in addition, 11 offer B.S., 11 M.S. and 8 offer Ph.D. degrees in fisheries or wildlife management.

Gabrielson, Ira N. WILDLIFE CONSERVATION. Macmillan Co., N. Y. 11. 2d edition. xii + 244 p., 23 figs., 32 pls. 1959. $5.50.

This is the familiar basic text on wildlife conservation brought up-to-date by (1) the addition of a new chapter which describes the effect of changing patterns of agriculture upon wildlife, and (2) a revision of the flyway maps and the distribution maps of waterfowl. The four major changes on agricultural lands which effect wildlife populations are (1) the soil conservation program; (2) agricultural conservation payments (for draining marshes or clearing brushland); (3) industrial farming; and (4) the increased use of pesticides. Critics may note that in the revisions of certain chapters recent material and

techniques have not been included--but Gabrielson clearly in his preface states that "an effort has been made to retain the basic conservation philosophy...and ...no attempt has been made to introduce those [new methods and new concepts] that are still in the developmental or experimental stage." The emphasis of this book is the need for broad programs in conservation and the recognition of the close interrelationship of wildlife to soil, water and vegetation. This is expressed in a clear manner which makes this book an ideal text for wildlife conservation.

Koskimies, Jukka, and Paavo Rajala. GAME MARKING BY THE FINNISH GAME FOUNDATION, 1947-1956. Papers on Game Research 20. 16 p., 2 figs. 1959.
During the first 10 yrs., 1947-56, the total number of individuals marked was 4,680, consisting of 4,395 birds and 285 mammals. Altogether, 209 birds and 12 mammals have been notified as recovered. The Finnish wing tag is described and figured.

Mendall, Howard L. (U. Me., Orono.) THE WILDLIFE RESEARCH PROGRAM AT THE UNIVERSITY OF MAINE. Me. Field Nat. 15(3): 72-83. July 1959.
Highlights of wildlife research at the Me. Coop. Res. Unit since 1935. The classification of 35 thesis topics by subject is as follows: waterfowl - 6; white-tailed deer - 5; woodcock - 3; ecology - 3; moose - 3; ruffed grouse, muskrat, beaver, pathology or parasitology, techniques, and limnology - 2 each; snowshoe hare, raccoon and pheasant - 1 each.

Osborn, Katherine H., Ray A. Yoder, and William I. West. (Ore. State Coll., Corvallis.) FORESTRY THESES ACCEPTED BY COLLEGES AND UNIVERSITIES IN THE UNITED STATES -- SUPPLEMENT JANUARY 1956-JUNE 1958, INCLUDING ADDITIONS FOR 1900-1955. For. Sci. 5(3): 293-314. Sept. 1959.
A listing by college and year of 575 forestry theses many of which concern wildlife.

Webb, James W., editor. PROCEEDINGS OF THE TWELFTH ANNUAL CONFERENCE, SOUTHEASTERN ASSOCIATION OF GAME AND FISH COMMISSIONERS, OCTOBER 19-22, 1958. Printed at Columbia, S. C., by SE. Assn. Game & Fish Comms. iv + 330 p., illus. 1959. $2.00 from J. W. Webb, Sec.-Treas., Box 360, Columbia, S. C.
A well-printed volume of proceedings in a convenient (6 x 9 in.) size. It contains 55 papers, 21 of them from technical game sessions, 19 from technical fish sessions, and for the remaining sessions the breakdown was: conservation education and general - 7; law enforcement - 4; and special committee reports - 4. Eight of the technical game papers were reviewed in WR 95: 14-18. These covered a symposium on the effect of the fire ant eradication program upon wildlife. These were published as a 34-page preprint which was distributed by game departments of the Gulf States. Other technical wildlife papers are entered in this issue of WR.

Webb, William L. WILDLIFE FORSCHUNG IM HUNTINGTON VERSUCHSREVIER. [WILDLIFE INVESTIGATIONS IN THE HUNTINGTON RESEARCH AREA.] Z. Jagdwissensch. 4(4): 151-153. Dec. 1958.
In German with summaries in French and English. General description of the Huntington Forest near Syracuse, N. Y. Long-term studies are conducted there on population levels of ruffed grouse, red squirrel, mice, and white-tailed deer and the relationship of these animals to their environment.--V. F. Flyger.

WILDLIFE--FOOD HABITS & TECHNIQUES

Stains, Howard J. (S. Ill. U., Carbondale.) USE OF THE CALCANEUM IN STUDIES OF TAXONOMY AND FOOD HABITS. J. Mamm. 40(3): 392-401, 5 figs. Aug. 1959.
The morphology of the calcaneum (heel bone) of North American mammals at the ordinal, family, genus, and species level is discussed. Similarities and differences in the calcaneum were found both within and between these various taxonomic levels. Thirty-four species are illustrated. The calcaneum seems to possess characteristics useful in taxonomy and should be investigated further. For identification in food habits investigations, this bone is a useful tool.--Author.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Banks, I. L. ORCHARD MOUSE CONTROL. Ill. State Hort. Soc. Trans. 92: 113-117. 1958.

Bentley, E. W. (Infestation Control Div., Tolworth, Eng.) BIOLOGICAL METHODS FOR THE EVALUATION OF RODENTICIDES. Tech. Bul. Min. Agr. Fish. & Food 8. 35 p., illus. 1958. [From Biol. Abst. 34(2).]

Rodenticides effective against the following species are discussed: Rattus norvegicus, R. rattus, and Mus musculus. Acute and chronic poisons and poisonous dust are considered. Laboratory toxicity studies are of value, but a given rodenticide is likely to affect rodents in the field to a different degree. Particle size has an appreciable effect on the toxicity of solid acute poisons. Laboratory tests of unpalatability are usually of more value when chronic poisons are tested than when used in the testing of acute poisons, and factors operative in the acceptance or refusal of bait by animals are discussed. In laboratory investigations of the toxicity of rodenticides, it is essential to use wild rats or mice; results obtained for one species cannot be assumed to be applicable to another. Field tests and the assessing of danger to man and other animals are also discussed. 43 references.--MDS.

Debevec, Robert M. THE BOUNTY BONANZA. Sports Afield 142(1): 20-21, 89-91, illus. July 1959.

A state-by-state analysis of the bounty system. Nearly 2 million dollars is spent annually in bounty payments by the 31 states that still use the system.

Eygenraam, J. A. VERHÜTUNG VON WILDSCHÄDEN MITTELS TIERÖL. [PREVENTION OF CROP DAMAGE BY USE OF BONE TAR OIL.] Z. Jagdwissensch. 4(4): 211-213. Dec. 1958.

In German with English and French summaries. Rabbit, hare and deer damage to crops was prevented for periods of up to 2 months surrounding fields with 1/4" ropes soaked in bone tar oil. The effectiveness of this repellent is believed to be due to the animal's dislike of the strong odor which masks the odors of its enemies.--V. F. Flyger.

Griffiths, M. E. (Wildl. Surv. Sect., C.S.I.R.O., Canberra, Australia.) THE EFFECT OF WEATHERING ON THE TOXICITY OF BAITS TREATED WITH SODIUM FLUOROACETATE. C.S.I.R.O. Wildl. Res. 4(1): 93-95, 1 fig. July 1959.

Comparison of the effects of weather on rabbit baits (unhusked oats and fresh carrots) treated with "1080." Under dry sunny conditions, both baits retained their initial potency; after a fall of 1.5 in. of rain, the oats retained about half of the initial potency while very little "1080" could be detected in the carrots. The potencies remained at these levels after successive rains.

Higuchi, S., and B. Igarashi. ON THE BASIC MATERIALS USED AS POISONOUS BAITS FOR FIELD MICE AND VOLES ESPECIALLY DURING THE BREEDING SEASON. Japan. For. Exp. Sta. B 111: 73-81. Feb. 1959. [Listed in Bibliog. Agr. 23(10), 1959.]

In Japanese with English summary.

Holm, Leroy, Franklin A. Gilbert, and Ernest Haltvick. (U. Wis., Madison 6.) EXAMINATION OF RODENT COVER ADJACENT TO APPLE TREES. Weeds 7(4): 405-408, 1 fig. Oct. 1959.

Microtus spp. will seldom cross a bare area to feed. It is desirable to remove all vegetation at the base of fruit trees to help reduce the possibility of girdling. Advantages of herbicides over costly hand methods are discussed. Monuron or Diuron was applied to areas adjacent to the trunks of 150 trees of varying ages, and under varying site conditions. Application rates ranged from 2.5 to 6.0 lb./acre. Some areas were treated with 10 lb./acre annually for 4 years. Ten pounds per acre of Monuron or Diuron have given complete control of all vegetation for 2-3 years following application. No sign of injury has been observed on any tree during the 5 years of this study.

Howard, Walter E. (U. Calif., Davis.) HOW TO OVERCOME BAIT SHYNESS IN RODENTS. Pest Control 27(8): 9-10, 13. Aug. 1959.

Bait shyness may be the result of individual food preferences, aversion to unfamiliar foods, observation of abnormal behavior of other animals already poisoned by eating the bait, or by eating sublethal amounts of the bait. Bait shyness is more common than rodenticide shyness. It is advisable, therefore, to provide different kinds of baits or different mixtures of baits at different bait stations. If different rodenticides are used they should be put at different stations, not mixed. Prebaiting is useful but increases labor. Prebaiting by distributing poison and non-poison baits together is effective if each toxic kernel is lethal. Slow-acting rodenticides such as the anticoagulants are effective because rodents do not associate poison symptoms with the food. Many animals become more wary of baits if their population drops sharply and therefore durable poison baits distributed sparsely may be most effective. A method is described to make grain baits durable. Most odors and other attractants in baits are not effective, although jam is a good rabbit bait in New Zealand and Australia.--L. F. Stickel.

Hudson, Geo. E., and J. David Solf. (State Coll. Wash., Pullman.) CONTROL OF SMALL MAMMALS WITH SUNKEN-CAN PITFALLS. J. Mamm. 40(3): 455-457. Aug. 1959.

Sunken fruit juice cans proved very effective in capturing small mammals. In a 7-week test 193 individuals of 4 spp. were taken in 48 sunken cans. Baited cans were only slightly more effective than unbaited ones.

Kulicke, H. PRAKTISCHE BEKÄMPFUNG DER ERDMAUS (MICROTUS AGRESTIS L.) IM WALDE UNTER VERWENDUNG VON GEBRAUCHLICHEN BEWÄRTEN UND NEU ENTWICKELTEN METHODEN. Forst U. Jagd 9(2): 81. Feb. 1959. [Listed in Bibliog. Agr. 23(9), Sept. 1959.]

In German. The use of standard and new control measures in combating Microtus agrestis.]

Schindler, U. WIE WIRKEN SICH DIE FLÄCHENBEGIFTUNGEN GEGEN ERDMÄUSE AUF DIE MIT IHNEN ZUSAMMENLEBENDEN KLEINSÄUGER AUS? Forst U. Holzwirt 14(2): 26-28. Jan. 1959.

[In German.] Effect of repellents on field voles and small mammals.

Szczerbinski, W. THE PROBLEM OF STANDS RIPPED BY GAME ANIMALS AND CONSIDERATIONS PERTAINING TO METHODS ADEQUATE FOR THE STUDY OF EFFECTS OF THE DAMAGE IN PINE AND SPRUCE STANDS. Sylwan 103(5): 73-90. May 1959. [Listed in Bibliog. Agr. 23(10), 1959.]

In Polish with English summary.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

KANSAS FORESTRY, FISH AND GAME COMMISSION, 17TH BIENNIAL REPORT, JUNE 30, 1958. 68 p., illus. 1958.

Account of activities from June 30, 1956 to June 30, 1958. Break in drought after fall of 1956 resulted in great increases of waterfowl and upland game birds. Lakes and ponds built during the drought were filled and ponds and potholes appeared all over the state. Hunting statistics and estimated kills of small game are tabulated. Federal Aid projects are listed. Policies and plans are described for the new land management division that was set up to handle the 87,660 acres of land controlled by the Commission.--L. F. Stickel.

North Carolina. SIXTH BIENNIAL REPORT OF THE...WILDLIFE RESOURCES COMMISSION, JULY 1, 1956 TO JUNE 30, 1958. 101 p., illus. 1959.

N. C. is now harvesting annually more than 1,000 deer from its management areas. A tabulation of these kills and of other game for the biennium is tabulated on p. 60. The successful stocking of 52 wild-trapped turkeys on 3 management areas is considered ample justification for the continuation of the turkey restoration program. Correlations between ovulation rates for deer, buck kill, deer population densities and fawn weights for 4 management areas are tabulated.

Harris, Van T., and Robert H. Chabreck. SOME EFFECTS OF HURRICANE AUDREY ON THE MARSH AT MARSH ISLAND, LOUISIANA. Proc. La. Acad. Sci. 21: 47-50. 1958. [From Biol. Abst. 34(1).]

Hurricane Audrey, which reached the Gulf Coast in June, 1957, covered Marsh Island with about 7 feet of water. This quickly drained away and in approximately 36 hours the water level had returned to normal. An estimated 70% of the nutria were killed or driven away by the hurricane. Scirpus olneyi made an unusual summer growth after the hurricane.--C. H. Penn.

ITBON WERKZAAMHEDEN IN 1958 / ANNUAL REPORT INSTITUTE FOR BIOLOGICAL FIELD RESEARCH. ITBON, Kemperbergerweg 11, Arnhem, Netherlands. Mededeling nr. 44. 1-40 p., illus. 1959.

In Dutch with English summary. ITBON's research program includes investigation into the relationship of animal and plant communities to agriculture, and research on problems of wildlife management and forest entomology. In studies on the effects of biocides on earthworms, it was found that mortality was influenced by the density of earthworms in the tests. Investigations on food of game species continued. It was found that "a coincidence exists between barking of young pine trees by [red] deer and lack of more suitable food." Censuses of roe deer and seals were carried on. Aerial counts of seals were found to be more reliable than those made from boats. Other investigations included studies on duck migration during winter and cooperative investigations of wildlife diseases.

Office of River Basin Studies. INVENTORY OF PERMANENT WATER AREAS OF SIGNIFICANT VALUE TO WATERFOWL IN THE STATE OF VERMONT. US F&WS, 1105 Blake Bldg., 59 Temple Pl., Boston 11, Mass. 6 p., 1 map. April 1959.

Present land-use practices in Vermont do not pose a threat to the 15,712 acres of wetlands. The 177,900 acres of permanent water is considered even less vulnerable to destruction. Acreages are tabulated by county and type.--From auth. summ.

Smith, D. A. REFUGE MANAGEMENT IN RELATION TO MOSQUITO CONTROL. Utah Mosquito Abatement Assn. Proc. 11: 40-41. 1958. [From Mosquito News 19(2).]

Stanton, Frank W. (5920 SW. 18th Drive, Portland, Ore.) PLANTING FOOD FOR WATERFOWL. Ore. State Game Comm. (Portland), Misc. Wildl. Publ. no. 1. ii + 17 p., 3 figs. 1957.

A treatment by species of N. Dak. crop plants and aquatics used by waterfowl. Seeding dates and rates, site selection, cultivation practices, costs per acre, yields and utilization by waterfowl of these plants are outlined in the text and the accompanying tables.

Walker, Charles R. (Mo. Cons. Comm.) CONTROL OF CERTAIN AQUATIC WEEDS IN MISSOURI FARM PONDS. Weeds 7(3): 310-316, 4 figs. July 1959.

"1. Distributing water soluble 16-20-0 fertilizer from special floating distributors has given effective control of many submersed aquatic weeds by direct toxicity as well as producing a continuous plankton bloom. 2. Distribution of 0-46-0, 8-24-8, or other mixed fertilizer from floating platforms was superior to broadcast distribution in the water, but inferior to 16-20-0 as above. 3. The technique of dividing a pond in two, or making several small enclosures, with vinyl plastic sheets supported by styrofoam floats and buried at the bottom, was valuable for both fertilizer and herbicide studies. 4. Pelleted simazin and a dalapon-2,4-D mixture did not injure fish or fish food species. Simazin was effective in controlling most submerged weeds. 5. Pelleted herbicides have been more effective and longer-lasting than liquid formulations."--Auth. summ.

Wilson, Kenneth A. (N. C. Wildl. Resources Comm.) WOLF IN DISGUISE. Wildl. in N. C. 23(7): 11-13. July 1959.

County distribution of alligator weed in N. C. has increased from two counties in 1954 to 11 in 1958. Borascu proved effective in eradication, but also expensive. In cooperative studies with the US F&WS, infested areas have been treated with "everything from Baron and other soil sterilants to Dalapon and 2,4-D." A cooperative control program, headed by the Corps of Army Engineers (Wilmington), is scheduled to start in July.

Cornelius, Donald R., and Charles A. Graham. (Calif. For. & Range Exp. Sta., Berkeley.) SAGEBRUSH CONTROL WITH 2,4-D. J. Range Mgt. 11(3): 122-125, 1 fig. May 1958.

Five million acres of rangeland in ne. Calif. are dominated by 1 of 3 spp. of sagebrush. Best control was obtained with 2-lb. acid equivalent of butyl ester of 2,4-D in 9 gal. of water and 0.5 gal. diesel oil per acre applied between late May and mid-June. Distribution of spray to all of the foliage was necessary for good kill and was accomplished by airplane, helicopter, and ground-rig sprayers.--From authors' summ.

Davis, Charles M. (U. Mich., Ann Arbor.) FIRE AS A LAND-USE TOOL IN NORTHEASTERN AUSTRALIA. Geog. Rev. 49(4): 552-560, 5 figs. Oct. 1959.

Burning is the only method of land improvement that is cheap enough and fast enough to be useful in the diffuse economy of Queensland.

Fisher, C. E., and Lawrence Quinn. (Texas Agr. Exp. Sta., Lubbock.) CONTROL OF THREE MAJOR BRUSH SPECIES ON GRAZING LANDS IN THE UNITED STATES, CUBA, AND BRAZIL. J. Range Mgt. 12(5): 244-248, 4 figs. Sept. 1959.

Chemical control methods for mesquite (Prosopis juliflora) in the US, marabu (Dichstachys nutans) in Cuba, and leiteiro (Taberae montana fuchsiaefolia) in Brazil. Range carrying capacity has increased up to 3-4 fold after 2,4-D and 2,4,5-T applications depending upon soil and water conditions.

Holmgren, Ralph C., and Joseph V. Basile. (Intermtn. For. & Range Exp. Sta., US For. Serv., Ogden, Utah.) IMPROVING SOUTHERN IDAHO DEER WINTER RANGES BY ARTIFICIAL REVEGETATION. Idaho Dept. Fish & Game, Wildl. Bul. no. 3. 61 p., 16 figs. 1959.

A handbook of recommendations for successful range seeding, particularly with bitterbrush (Purshia tridentata). This bulletin is a summarization of the results of a cooperative study carried on by the Idaho Fish & Game Dept. and the Intermountain Forest & Range Exp. Sta. Major sections of the handbook include: deer winter ranges, species to be planted, planting recommendations (with subsections on weed control methods and the importance of weed control), protection and management of the plantation, and cost considerations. Of the 50 spp. of browse plants tested for adaptability for survival by field plantings only 4 showed much promise and only Purshia was outstanding.

Mueggler, Walter F., and James P. Blaisdell. (Intermtn. For. & Range Exp. Sta., Ogden, Utah.) EFFECTS ON ASSOCIATED SPECIES OF BURNING, ROTOBEATING, SPRAYING, AND RAILING SAGEBRUSH. J. Range Mgt. 11(2): 61-66, 1 fig. Mar. 1959.

Burning, rotobeating, spraying with 2,4-D, and railing were compared on adjacent areas in Idaho to determine the relative effects upon associated native spp. and forage production. Burning was the only treatment that injured any grasses. Grasses were greatly favored by the other treatments. Burning brought about the greatest increase in total forbs. Forbs were also favored by rotobeating and railing. Spraying caused a pronounced reduction in forbs. Sagebrush was greatly reduced by all treatments. By the 3rd year after treatment, sagebrush production on burned area was only 11% of what it would have been with no treatment, 14% on the rotobeaten area, 50% on the sprayed area, and 43% on the railed area. The cost of burning was about $0.70 per acre. Other per acre costs were: rotobeating--$3-6; spraying--$2.50-3; and railing twice over --$2-2.50. All treatments produced sizable increases of available forage.

Nord, Eamor C. (U. S. Forest Service, Berkeley, Calif.) BITTERBRUSH ECOLOGY --SOME RECENT FINDINGS. Pacific SW. Forest & Range Exp. Sta., For. Res. Note 148. 8 p., illus. July 1959.

The two bitterbrush species occupy separate ranges. Antelope bitterbrush (Purshia tridentata) occurs in the north; desert bitterbrush (P. glandulosa) prevails in the south. Both species prefer coarse-textured and well-drained soils. Bitterbrush plants live to be at least 160 years old but the average age is between 32 and 44 years. Application of the findings to browse restoration are discussed.--From abst.

Nord, Eamor C. (U. S. Forest Service, Berkeley, Calif.) BITTERBRUSH PLANTS CAN BE PROPAGATED FROM STEM CUTTINGS. Pacific SW. For. & Range Exp. Sta., For. Res. Note 149. 4 p., illus. July 1959.

Stem cuttings taken from greenhouse and field grown antelope bitterbrush (Purshia tridentata) plants treated with 0.1 percent indol-3-butyric acid resulted in 50-65 percent successful rooting in 58 days. Higher acid concentrations gave less success. Desert bitterbrush (P. glandulosa) cuttings failed to root in the same time.--From abst.

Stanton, Frank Webster. AUTECOLOGICAL STUDIES OF BITTERBRUSH (PURSHIA TRIDENTATA (PURSH) D.C.). Ph.D. thesis, Ore. State Coll. 203 p. 1959. [From long abstract in Dissertation Abst. 20(3).]

There has been increasing interest in recent years in artificial seeding of browse species, especially bitterbrush, on depleted ranges. This study is an attempt to investigate the basic ecology essential to proper management of Purshia. Natural occurrence, growth characteristics (above and below the ground), viability and germination of seeds, nursery techniques, and losses attributed to animals were studied. Findings included: (1) Seeds rather than fruits should be planted. (2) Fall seeding produced superior results. (3) Rodents and insects contributed substantially to early seedling mortality. (4) Transplanted nursery-grown seedlings resulted in 60% survival after one season and this method is recommended rather than seeding on similar sites.

Weaver, Richard A., Floyd Vernoy, and Bert Craig. (Calif. Dept. Fish & Game, Sacramento.) GAME WATER DEVELOPMENT ON THE DESERT. Calif. Fish & Game 45(4): 333-342, 7 figs. Oct. 1959.

Construction and maintenance of game water developments with: discussions on water indicator plants and competition from livestock and undesirable feral animals. Water developments may have an adverse effect on game if there is subsequent over-utilization by competing animals.

FORESTLAND--FORESTRY & ECOLOGY

Heady, Harold F., Robert P. Gibbens, and Robert W. Powell. (U. Calif., Berkeley.) A COMPARISON OF THE CHARTING, LINE INTERCEPT, AND LINE POINT METHODS OF SAMPLING SHRUB TYPES OF VEGETATION. J. Range Mgt. 12(4): 180-188, 6 figs. July 1959.

The foliage cover of mixed shrubs on an area 100' x 100' was completely mapped, and sampled by the line intercept and line point methods. Statistical tests indicated that all three will give reliable estimates of the population mean. The transect methods yielded less variable data and will sample adequately with fewer plots and less effort than the charting procedure. The transect procedures gave approximately equal results with the same total length of line for species with ground cover over 3%. However, the line point method took less time and is, therefore, recommended as the best of the 3 methods to sample areas of shrubs for percentage species composition on a basis of ground cover. The line intercept method sampled species with ground cover of less than 3% better than the line point method.--From summ.

Lutz, Harold J. (Yale U., New Haven, Conn.) ABORIGINAL MAN AND WHITE MAN AS HISTORICAL CAUSES OF FIRES IN THE BOREAL FOREST, WITH PARTICULAR REFERENCE TO ALASKA. Yale U., School of For. Bul. no. 65. iii + 49 p. 1959. $1.00.

A narrative account of Alaskan fires caused by man with comparisons as to use of fire by aboriginal man and white man. This work complements an earlier work by Lutz (see WR 86: 27) which treats with the ecological aspects of fire in boreal Alaska and both provide long pertinent bibliographies.

Maisenhelder, Louis C. (Delta Res. Cent., Stoneville, Miss.) UNDERSTORY PLANTS OF BOTTOMLAND FORESTS. S. For. Exp. Sta. (New Orleans 13, La.) Occas. Pap. 165. 1-40 p., photos. 1958.

Photos, descriptions, habitat preferences, and importance in forest management of some of the more conspicuous minor plants in the alluvial bottoms of major s. rivers. Is written particularly for lower Miss. R., but includes species ranges over e. U. S. Plants treated are 2 grasses, 9 forbs, 13 vines, 12 shrubs and small trees.--L. F. Stickel.

FORESTLAND--FORESTRY & ECOLOGY--Continued

Orr, Thomas J. (Weyerhaeuser Timber Co., Klamath Falls, Ore.) TIMBER STAND MAPS, PLOTLESS CRUISING, AND BUSINESS MACHINE COMPUTATION AS ELEMENTS OF A TIMBER SURVEY METHOD. J. For. 57(8): 567-572, 2 figs. Aug. 1959.
Using the techniques outlined in this paper, a 2.5% cruise compares favorably in accuracy with a 20% strip cruise, even on relatively small areas. The cost of the stratified sampling-wedge prism-punch card system is about one third less than the strip cruise method which provides only part of the information of the former method. Provocative questions are raised regarding sampling error, sample size and the practicability of developing a scheme of sequential sampling.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Carhart, Arthur H. TREES AND GAME--TWIN CROPS. Am. For. Products Industries, Inc., 1816 N St. NW., Wash. 6, D. C. 32 p., illus. [1959?]
Educational booklet describing history of game and forest problems and encouraging cooperation between tree farm owners and hunters. Classic examples of wildlife irruptions are described to show the necessity of harvesting game surplus. Examples are given of tree farms successfully opened to hunters. Conservation interests common to both groups are emphasized.--L. F. Stickel.

Collins, Jack O. (La. Wild Life & Fisheries Comm., New Orleans.) OAK MAST BOON TO WILDLIFE. La. Cons. 11(9): 2-4, 27-28, illus. Sept. 1959.
Techniques used in collecting oak mast data in La. are described. Av. yields and weights of oak mast from various sections of the states are presented. The remainder of the paper is a discussion of mast use by deer, squirrel, turkey, and quail.

CONTROL OF VEGETATION WITH HERBICIDES ETC.

Arend, John L. AIRPLANE APPLICATION OF HERBICIDES FOR RELEASING CONIFERS. J. For. 57(10): 738-740, 742, 744-745, 747-749. Oct. 1959.
A summarization of the developments in the U. S. of this technique since 1950. A compendium on the application rates of the various herbicides, the effective dates of application by regions, types of equipment used and their relative costs. Mention is made of the non-toxicity of 2,4-D and 2,4,5-T to game animals and the use of herbicides for improving wildlife habitats.

British Weed Control Council. WEED CONTROL HANDBOOK. Blackwell Scientific Publ. (Oxford). viii + 245 p. 1958. 12s 6d. [From Biol. Abst. 33(10).]
This book is intended for those people who are interested in the practical as well as technical aspects of weed control. It covers those weed killers that are in use and presently in the experimental stages. Part I includes an introductory chapter on herbicides, giving their classification, formulation, and notes on herbicides used in Great Britain. Part II includes recommendations and information concerning the use of herbicides in agriculture, horticulture, forest nurseries and on lawns and sports turfs. Also, chapters on special weed problems, non-selective weed control and preharvest desiccation are included. Part III goes into the application of herbicides, the mechanics of application and the legal aspects and insurance involved. Part IV deals with laws concerning injurious weed seeds and noxious weeds, and weeds and weed seeds in relation to crop seed certification schemes. The last part of the book lists new and approved herbicides. There are 3 appendices: Appendix I consists of a glossary of technical terms; appendix II gives a list of common names and chemical abbreviations; appendix III lists properties of herbicides.--From abst. by H. H. Grossman.

King, J. R., W. A. Simanton, and D. W. Kretchman. (Fla. Citrus Exp. Sta., Lake Alfred.) CHEMICAL CONTROL OF WEEDS IN FLORIDA CITRUS GROVE DITCHES. Proc. Fla. State Hort. Soc. 71: 157-165. 1958. [From Biol. Abst. 34(1).]
Chemical herbicides were evaluated for the control of paragrass, cattails, and a mixture of broadleaf weeds and grass in citrus grove ditches. Where a mixture of grass, broadleaf weeds, and woody plants were the problem, a single application of Karmex DW at 40 lb./acre, or Urox at 200 lb./acre gave control for 1 year or more. Best results were obtained during a relatively dry year, and where treatments were applied before dense weed growth occurred.--From authors' abst.

Yajima, Y., T. Inagawa, and T. Uno. STUDIES ON THE CONTROL OF TREES, SCRUBS, BRUSHES AND WEEDS AT THE WASTE LAND; ON THE EFFECT OF 2,4,5-T BUTYL ESTER. Gifu U. Facul. Agr. Res. Bul. 9: 12-20. Dec. 1958. [From listing in Bibliog. Agr. 23(9), Sept. 1959.]
In Japanese with English summary.

Zukel, J. W., and C. O. Eddy. (Naugatuck Chem. Div., U. S. Rubber Co., Bethany, Conn.) PESTICIDE USE ON HIGHWAY AREAS. Agr. Chemicals 12(7): 38-39, illus. 1957. [From Biol. Abst. 33(12).]
The Committee on Roadside Construction and Maintenance surveyed the states to secure information on the present use of pesticides. Tables show the extent, cost and type of herbicide and insecticide used. Potential savings of $18.45 per mile through use of herbicides are demonstrated by the cost analysis for Ohio.--From abst. by MDS.

MAMMALS--GENERAL

Chase, Robert S., Jr. (U. Ark., Fayetteville.) THE LOWER JAW AS A DIAGNOSTIC AID IN THE IDENTIFICATION OF MAMMALS. Proc. Ark. Acad. Sci. 7: 47-49, 2 pls. 1955.
Scaled figures of the left side of the lower jaw of many common Ark. mammals are included. This paper was designed primarily for archeological research in Ark. and has been limited to mammals most likely to be associated with Indian remains.

Larimer, James L. (Duke U., Durham, N. C.) HEMOGLOBIN CONCENTRATION AND OXYGEN CAPACITY OF MAMMALIAN BLOOD. J. Elisha Mitchell Sci. Soc. 75(2): 174-177. Nov. 1959.
Oxygen capacity and hemoglobin values were obtained for the blood of 18 spp. of mammals including the opossum, cotton rat, deer mouse and the eastern pipistrel bat.

Terres, John K. THE AUDUBON BOOK OF TRUE NATURE STORIES. Thomas Y. Crowell Co., N. Y. x + 294 p., illus. 1958. $5.00.
Most of these stories are subjective accounts of experiences by amateur wildlife enthusiasts. They first appeared in the Audubon Magazine and were selected and edited for this volume by John K. Terres, the editor of Audubon Magazine. In the original editions, the articles reached interested amateur groups. This is fine, but the interests of wildlife are perhaps better served by reaching the much larger public who are not a part of any committed group, such as the Audubon Society. This volume should prove attractive to a large audience. The readability of this book was tested by submitting it to a person who is not a member of any conservation society and who has not given any outward sign of being committed to conservation. She read parts of this volume and then found herself relating incidents she had read when she encountered similar species of wildlife in travels with her children. It would seem, therefore, that this book engenders a wildlife knowledge that leads to a wildlife interest. The illustrations by Walter W. Ferguson are excellent and show fine knowledge of the animals portrayed, often in unusual and sometimes amusing situations.--John L. George.

MAMMALS--FAUNAS AND MANUALS

Anderson, Sydney, and Bernard C. Nelson. (U. Kans., Lawrence.) ADDITIONAL RECORDS OF MAMMALS OF KANSAS. Trans. Kans. Acad. Sci. 61(3): 302-312. 1958.
New locality records for many species and subspecies.

Coulter, Malcolm W., and Clarence E. Faulkner. (U. Me., Orono.) COMMON SMALL MAMMALS OF MAINE / THEIR LIFE HISTORIES AND CONTROL. Me. Ext. Serv., Bul. 475. 40 p., 4 figs. + photos. June 1959.
This well-illustrated, non-technical bulletin presents life histories of several of the smaller mammals and methods for their control. Included in the discussion of each species are sections covering description of the species, distribution and abundance in Me., habits, food habits, reproduction, remarks and control. Photographs of most of the forms treated are included.

Halloran, Arthur F., and Bryan P. Glass. (Wichita Refuge, Cache, Okla.) THE CARNIVORES AND UNGULATES OF THE WICHITA MOUNTAINS WILDLIFE REFUGE, OKLAHOMA. J. Mamm. 40(3): 360-370. Aug. 1959.

History and status of carnivores and ungulates of the Wichita Mts. Wildlife Refuge with a brief account of that refuge. The reintroduction of the bison in 1907 has proven successful as was the introduction of longhorn cattle in 1927. However, introductions of mule deer and bighorn in 1929 have proved unsuccessful.

Hoffmeister, Donald F. (U. Ill., Urbana.) ZOOGEOGRAPHICAL RELATIONSHIPS OF THE MAMMALS OF ILLINOIS. Ill. Acad. Sci. Trans. 46: 212-215, 1 fig. 1953.

The majority (65%) of the 54 species of native mammals of Illinois are wide-ranging. The remaining species are predominantly southern and western.

Howell, J. C., and C. H. Conaway. (U. Tenn., Knoxville.) OBSERVATIONS ON THE MAMMALS OF THE CUMBERLAND MOUNTAINS OF TENNESSEE. J. Tenn. Acad. Sci. 27 (2): 153-158. April 1952.

Negus, Norman C., and James S. Findley. (Tulane U., New Orleans, La.) MAMMALS OF JACKSON HOLE, WYOMING. J. Mamm. 40(3): 371-381, 1 fig. Aug. 1959.

Ecological, distributional, and reproductive data for 58 spp. of mammals found now or formerly in Jackson Hole are presented based on the observations and collections of the authors and on the literature.--J. S. Findley.

Parmalee, Paul W., and Karl W. Jacobson. (Ill. State Mus., Springfield.) VERTEBRATE REMAINS FROM A MISSOURI CAVE. J. Mamm. 40(3): 401-405. Aug. 1959.

Bones of 22 species of mammals and two of birds were recovered from a verticle fissure in Ralls Co., Mo. in 1956-7. This deep fissure served as a natural death trap for animals inhabiting the area and although the species represented were recent, most of the animals were probably trapped prior to 1850. Several, such as the mountain lion, black bear and eastern woodrat, no longer inhabit the area.--Paul W. Parmalee.

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Hays, Horace A. (Kans. State Teachers Coll., Pittsburg.) THE EFFECT OF MICROCLIMATE ON THE DISTRIBUTION OF SMALL MAMMALS IN A TALL-GRASS PRAIRIE PLOT. Trans. Kans. Acad. Sci. 61(1): 40-63, 11 figs. 1958.

A total of 233 mammals of 25 spp. was collected during a one-year study of which 79% were taken from open grassland and 21% were taken from wooded ravine. Peromyscus maniculatus, Perognathus hispidus and Sigmodon hispidus were the most abundant small mammals in the open grassland; while in the ravine, Peromyscus leucopus and Neotoma floridana were most abundant. Temperature, precipitation, relative humidity, wind velocity and light intensity were measured for both habitats. With the possible exception of precipitation, these factors seem to have little effect upon the number of small mammals taken in traps, except on a seasonal basis. Precipitation seems to affect the number of small mammals taken in snap traps more than in live traps.

Hirth, Harold F. (U. Fla., Gainesville.) SMALL MAMMALS IN OLD FIELD SUCCESSION. Ecology 40(3): 417-425, 4 figs. July 1959.

Relative abundance of Peromyscus and Blarina in the pioneer, midseral and mature woodland stages of old fields in Conn., with notes on other spp. of mammals.

LoBue, Joseph, and Rezneat M. Darnell. (Marquette U., Milwaukee.) EFFECT OF HABITAT DISTURBANCE ON A SMALL MAMMAL POPULATION. J. Mamm. 40(3): 425-437, 4 figs. Aug. 1959.

A detailed account of the effects of certain farming disturbances on a small mammal population. The study area included two closely associated habitats, an alfalfa field and the adjacent edge areas. The experimental design was as follows: Determine the characteristics of a small mammal population before, during and following habitat disturbance. Population analysis was accomplished by standard methods of live and snap trapping, whereas habitat disturbance was

produced by cutting, raking and baling of the alfalfa. Predominent species obtained were the meadow vole (Microtus pennsylvanicus) and the prairie deer mouse (Peromyscus maniculatus bairdi). Primary habitat of Microtus was the edge areas, whereas Peromyscus was found in the cropfield proper. As vegetation increased in height and cover during the period before cutting, Microtus showed increased utilization of the field while Peromyscus made an opposite response. Following cutting, however, a negative response of Microtus and a positive response of Peromyscus to the sparse vegetative cover was indicated. Trapping data also revealed evidence of unusual population movements resulting from the farming disturbances.--J. LoBue.

McKeever, Sturgis. (U. Calif., Davis.) RELATIVE ABUNDANCE OF TWELVE SOUTHEASTERN MAMMALS IN SIX VEGETATIVE TYPES. Am. Midl. Nat. 62(1): 222-226, 1 fig. July 1959.

In a 21-month study of the larger mammals (deer and bear excluded) in 11 counties of sw. Ga. and nw. Fla., 2,688 individuals representing 12 spp. were trapped. Relative abundance of each sp. in 6 vegetative types was computed. Nine spp. showed a significant preference for one cover type; six spp. showed a significantly different relative abundance in 4 or more types. Total population of mammals greatest in pine-hardwoods and least in pure pine. Present trends towards increasing pine acreage may be expected to reduce mammal population.

New, John G. (State U. Teachers Coll., Oneonta, N. Y.) ADDITIONAL USES OF DYES FOR STUDYING THE MOVEMENTS OF SMALL MAMMALS. J. Wildl. Mgt. 23(3): 348-351. July 1959.

Experiments were conducted testing water-soluble and fat-soluble dyes which, when mixed with bait, were used to mark the fat, teeth and pelage of small mammals in order to study their movements. The technique involved the use of snap-traps and live-traps. No dyes were found that would mark the pelage or external parts of mice and shrews for extended periods of time. Alizarin red S was successfully used to mark teeth of meadow mice (Microtus pennsylvanicus) up to 5 days after bait removal, and white-footed mice (Peromyscus leucopus) up to 9 days after bait removal. The teeth of short-tailed shrews (Blarina brevicauda) were not marked with alizarin. Sudan III was recovered in the fat of snap-trapped shrews 10 days, and in white-footed mice 3 days, after bait removal. In the laboratory one white-footed mouse retained Sudan III for 2 weeks after it was fed the dye. No other dyes used to mark teeth or fat were successful in the field. Sudan black strikingly marked the fat of white mice and white rats. Suggested variations and improvements in the technique are given.--Auth. abst.

MAMMALS--PARASITES AND DISEASES

Burgdorfer, Willy, and Carl M. Eklund. (Rocky Mtn. Lab., Hamilton, Mont.) STUDIES ON THE ECOLOGY OF COLORADO TICK FEVER VIRUS IN WESTERN MONTANA. Am. J. Hyg. 69(2): 127-137. 1959. [From Biol. Abst. 33(10).]

In studying the ecology of Colorado tick fever (CTF) virus in a small region of western Mont. in 1958, immature and adult Dermacentor andersoni and their most common host animals were investigated to ascertain their importance in maintaining and distributing the virus. The golden-mantled ground squirrel (Citellus lateralis tescorum) was found to be a preferred host for immature D. andersoni and the main carrier of CTF virus. From 61 captured specimens, 28 (45.9%) virus isolations were made. In areas populated by this species of ground squirrels, the incidence of infected adult ticks was as high as 16%. From 209 Columbian ground squirrels (C. columbianus columbianus) tested, 27 (12.9%) virus isolations were made. CTF virus was also isolated from the blood samples of 5 of 26 chipmunks (Eutamias amoenus), 1 of 4 pine squirrels (Tamiasciurus hudsonicus richardsoni), and 1 of 6 deer mice (Peromyscus maniculatus), but not from the blood of 2 porcupines (Erethizon dorsatum) and 4 snowshoe rabbits (Lepus americanus). CTF appears to be characterized by sharply localized areas of infection correlated in this instance with the presence of the golden-mantled ground squirrel.--From abst. by W. Burgdorfer.

Butcher, Leonard V. THE PRESENT STATUS OF PARALYTIC RABIES (BAT-TRANSMITTED) IN TRINIDAD. West Indian Med. J. 7(1): 17-20. 1958. [From Biol. Abst. 33(10).]
In English with Interlingua summ. The history of rabies in Trinidad is briefly reviewed. The first cases among cattle appeared in 1925, and in 1929 there were 13 human deaths. Transmission of the rabies virus by the fruit-eating bat was demonstrated in 1931. In 1955, a Paralytic Rabies Control Committee was formed. Field work now centers on mass vaccination of cattle rather than on bat destruction. 7 species other than the vampire bat have been found to be infected with the rabies virus.--From auth. summ.

Evans, Burton Robert, Wm. G. Phillips, and Wm. E. Bickley. (Evans: US Public Health Service Quarantine Station, New Orleans (Algiers), La.) STUDIES OF 12 SPECIES OF MOSQUITOES AS POTENTIAL VECTORS OF FILARIAE AFFECTING SKUNKS, SQUIRRELS AND RACCOONS IN MARYLAND. Md. Agr. Exp. Sta. Bul. A-99. 31 p. June 1959.

Eyles, Don E., Colvin L. Gibson, Nell Coleman, Clinton S. Smith, John R. Jumper, and Frances E. Jones. (U. Tenn Sch. Med., Memphis.) THE PREVALENCE OF TOXOPLASMOSIS IN WILD AND DOMESTICATED ANIMALS OF THE MEMPHIS REGION. Am. J. Trop. Med. & Hyg. 8(4): 505-510. 1959. [From Biol. Abst. 34(3).]
In general, rats, mice, wild rabbits, squirrels, and wild birds showed very little infection. It appears epidemiologically significant that the highest rate of infections are shown to occur in those animals closely associated with human habitats.--From abst. by G. F. Otto.

Flir, K. ZUR TOXOPLASMOSE DES HUNDES. [TOXOPLASMOSIS IN DOGS.] Zbl. Vet. Med. 1(7): 810-827. 1954. [From review by Mendheim in Z. Jagdwissensch. 4(2), 1958.]
In German. Toxoplasmosis is found in many animals (marmots, squirrels, hares, rabbits, rats, mice, hamsters, and guinea pigs). It is an important mortality factor in young capercaillie in Sweden. Toxoplasmosis can be transmitted venereally, transplacentally, by mother's milk and by eating infected carrion.--V. F. Flyger.

Galton, Mildred M., Nell Hirschberg, Robert W. Menges, Martin P. Hines, and Robert Habermann. (Communicable Disease Center, Chamblee, Ga.) AN INVESTIGATION OF POSSIBLE WILD ANIMAL HOSTS OF LEPTOSPIRES IN THE AREA OF THE "FORT BRAGG FEVER" OUTBREAKS. Am. J. Public Health 49(10): 1343-1348. Oct. 1959.
From summ: A total of 89 wild animals including 41 foxes, 22 raccoons, 3 opossums, 3 rabbits, and 20 rodents [cotton rat, cotton mouse, deer mouse, golden mouse and house mouse] were trapped from Fort Bragg military reservation including the section where human cases of leptospirosis occurred during 1942-4. Clinical tests yielded leptospires from 10 (11.7%) of the 84 animals on which cultures were considered satisfactory. In view of the indicated high prevalence of leptospires in wild animals in the Ft. Bragg area, it is felt that additional animals should be examined and that additional serotypes will be found.

Hugghins, Ernest J. (S. Dak. State Coll., Brookings.) GUINEA WORMS FROM CARNIVORES IN SOUTH DAKOTA AND MINNESOTA, WITH A REVIEW OF THE DISTRIBUTION AND TAXONOMY OF DRACUNCULID WORMS IN NORTH AMERICA. Proc. S. Dak. Acad. Sci. 37: 40-46, 2 figs. 1958.

Kartman, L. (US Public Health Serv., San Francisco.) AN INSECTICIDE-BAIT-BOX METHOD FOR THE CONTROL OF SYLVATIC PLAGUE VECTORS. J. Hyg. 56(4): 455-465, illus. 1958. [From Biol. Abst. 33(9).]
Field trials were conducted with 5% and 10% DDT powder in rodent bait boxes against fleas on native wild rodents and in rodents' nests. About 90g of either powder were picked up by the rodents when placed in the bait boxes and resulted in effective immediate control of all flea species. Residual control of fleas on Microtus californicus was obtained over a period of several months. Analyses of Microtus nests showed large amounts of DDT had been transported to them by rodents. All flea species in nests were effectively controlled by 5% DDT for at least 132 days after DDT was removed from the area.

McKeever, Sturgis, George W. Gorman, and Lois Norman. (U. Calif., Davis.) OCCURRENCE OF A TRYPANOSOMA CRUZI-LIKE ORGANISM IN SOME MAMMALS FROM SOUTHWESTERN GEORGIA AND NORTHWESTERN FLORIDA. J. Parasitol. 44(6): 583-587. 1958. [From Biol. Abst. 33(10).]

A Trypanosoma cruzi-like organism was isolated from 93 of 552 (17%) opossums examined, 2 of 118 (1.7%) gray foxes, 9 of 608 (1.5%) raccoons, and 3 of 306 (1%) striped skunks from sw. Ga. and nw. Fla.--From authors' abst.

Philip, Cornelius B. (Rocky Mtn. Lab., Public Health Serv., Hamilton, Mont.) SOME EPIDEMIOLOGICAL CONSIDERATIONS IN ROCKY MOUNTAIN SPOTTED FEVER. Public Health Rep. 74(7): 595-600. July 1959.

A paper originally presented at the 15th International Congress of Zoology in London, July 1958. In the Bitterroot Valley of Mont., Dermacentor andersoni is the common tick vector of Rocky Mtn. spotted fever. Immature stages of this tick feed upon susceptible small animals. In an effort to explain why the incidence of human infections of spotted fever is higher on the west side of the valley, checks were made of the relative abundance of ticks on the small animals from 2 sides of the valley. No significant differences could be noted in the av. number of ticks per animal collected during a 3-yr. study. Dermacentor andersoni were reported on Columbian ground squirrels, golden-mantled ground squirrels, chipmunks, woodchucks and snowshoe hares. Much of the paper deals with laboratory and clinical aspects of Rocky Mtn. spotted fever.

SHREWS, MOLES, BATS

Griffin, D. R., and Alvin Novick. (Harvard U., Cambridge, Mass.) ACOUSTIC ORIENTATION OF NEOTROPICAL BATS. J. Exp. Zool. 130(2): 251-300. 1955. [From Biol. Abst. 33(10).]

Neotropical bats of the families Noctilionidae, Emballonuridae, Phyllostomidae and Desmodontidae emit pulses of high frequency sound with durations of 0.5-25 msec, and frequencies of 10-130 kc. The Noctilionidae are similar to the Vespertilionidae in producing sound pressures exceeding 100 dynes/cm^2 at 10 cm from the mouth, with the frequency dropping progressively from the beginning to the end of the pulse (typical range: 50-30 kc). Since these pulses are employed by Noctilio while catching fish, the hypothesis that fish are detected by echoes is critically discussed. The insectivorous Emballonuridae and the probably insectivorous Chilonycterinae also emit pulses of relatively high intensity but without progressive frequency modulation. In the Emballonuridae, Phyllostomidae, and Desmodontidae the frequency spectrum is variable and often complex, the predominant frequency ranging from 10 to 120 kc, sometimes with intense harmonics any one of which may rise or fall rapidly in relative amplitude, so that sometimes the "fundamental" disappears. Carollia, Artibeus, and Glossophaga can avoid fine wires as well as the Vespertilionidae, even when blinded or when the nose leaf is removed, but they become disoriented when their ears are plugged. Carollia emit essentially normal pulses through either the mouth or the nostrils. Bats that feed on fruit or large sleeping animals use pulses having only about 1/1000 the sound energy of those employed by bats which feed on flying insects or fish.

Hamilton, W. J., Jr., and G. A. Schad. (Cornell U., Ithaca, N. Y.) PARASITISM OF UNWEANED SHREWS BY THE CESTODE HYMENOLEPIS FALCULATA. Can. J. Zool. 37(3): 377. June 1959.

Suckling Sorex cinereus about 16 days old could not have become infected in the usual way by eating an arthroped host. It is common for shrews to eat their own rectal contents (re-ingestion). Perhaps the young got infective stages by eating feces of mother.

Handley, Charles O., Jr. (US Natl. Mus., Wash. 25, D. C.) A REVISION OF AMERICAN BATS OF THE GENERA EUDERMA AND PLECOTUS. Proc. US Natl. Mus. 110(3417): 95-246, 27 figs. 1959.

Novick, Alvin. (Harvard U., Cambridge, Mass.) ORIENTATION IN PALEOTROPICAL BATS. I. MICROCHIROPTERA. J. Exp. Zool. 138(1): 81-153, illus. 1958. [From Biol. Abst. 34(1).]

The orientation of 34 spp. of bats was studied. These include a carnivorous and a piscivorous form as well as insectivorous forms--all of which oriented acoustically. Their orientation pulses (and those of previously studied bats) can be classified by frequency pattern into 7 classes and subclasses which coincide with systematic groups. The frequency, frequency pattern, duration, intensity, repetition rate, and directional beaming of the orientation pulses were analyzed and correlated insofar as possible with the feeding and flight behavior of the species involved.

Twente, John W. (U. Utah, Salt Lake City.) SWIMMING BEHAVIOR OF BATS. J. Mamm. 40(3): 440-441. Aug. 1959.

Bats collected during hibernation in Kansas were released on the ground at a cavern's entrance. These bats swam across a shallow pool of water approximately 8 ft. in diameter which lay between the released bat and the cavern. "It may be concluded that, at least under the dire circumstances of capture and release, Myotis velifer incautus will readily enter the water and swim."

Vaughan, Terry A. (Colo. State U., Ft. Collins.) FUNCTIONAL MORPHOLOGY OF THREE BATS: EUMOPS, MYOTIS, MACROTUS. U. Kans. Publ., Mus. Nat. Hist., 12(1): 1-153, 17 figs. + 4 pls. July 1959.

Field investigations and observations are discussed in pages 9-38 under the headings of roosting habits, terrestrial locomotion, foraging habits, and flight. Bulk of the paper treats osteology, myology, and adaptations for flight.

RABBITS AND PIKAS

Bouvier, G., H. Burgisser, and P. A. Schneider. BEOBACHTUNGEN ÜBER DIE HASENKRANKHEITEN IN DEN JAHREN 1955/56. [OBSERVATIONS ON HARE SICKNESSES IN 1955/56.] Schweizerische Jagdzeitung (Zürich) (6). 1957. [From abst. by Rieck in Z. Jagdwissensch. 4(1), 1958.]

In German. Pseudotuberculosis was found in 65 of the 225 hares examined. Other important diseases were: staphylomycosis, brucellosis, toxoplasmosis, and infections resulting from injuries. There was no clear indication that pseudotuberculosis was the sole cause of the decline of hares in 1955 or in the die-off of 1948.--V. F. Flyger.

Bronson, Franklin H., and Otto W. Tiemeier. (Kans. State Coll., Manhattan.) NOTES ON CROP DAMAGE BY JACKRABBITS. Trans. Kans. Acad. Sci. 61(2): 226-229. Summer 1958.

In Kans., heavy crop damage by jackrabbits is probably the result of population concentrations rather than tremendous population increase. Damage of consequence is probably restricted to areas where drought has caused population concentration.

Bull, P. C. CHANGING INCIDENCE OF PARASITES IN A DECLINING RABBIT POPULATION. Proc. N. Z. Ecol. Soc. 5: 11-12. Dec. 1957. [From J. Mamm. 40(3).]

Labisky, Ronald F., and Rexford D. Lord, Jr. (Ill. Nat. Hist. Surv., Urbana.) A FLEXIBLE, PLASTIC EARTAG FOR RABBITS. J. Wildl. Mgt. 23(3): 363-365, 1 fig. July 1959.

Describes an improved technique for marking cottontail rabbits (Sylvilagus floridanus) with durable, plastic eartags for subsequent identification of individual rabbits in the field. Eartags were constructed of Masland Duran upholstery plastic; RamCote vinyl plastic paint was used to form numerals and letters on eartags. A 20-power spotting scope permitted individual identification of eartagged rabbits up to 220 yd.--R. F. Labisky.

Lord, Rexford D., Jr. (Ill. Nat. Hist. Surv., Urbana.) THE LENS AS AN INDICATOR OF AGE IN COTTONTAIL RABBITS. J. Wildl. Mgt. 23(3): 358-360, 1 fig. July 1959.

This paper presents a technique for determining the age of cottontail rabbits based on the growth rate of the lens of the eye. Ninety-two cottontail rabbits were raised in captivity and killed on a schedule over a period of 30 months. The growth-rate curve for the lenses of these rabbits was plotted from the weights of the dried lenses. The resultant curve proved to be suitable for estimating the age of wild rabbits whose lenses had been removed, dried, and weighed.--Author.

Lord, Rexford D. (Ill. Nat. Hist. Survey, Urbana.) WINTER PREGNANCY OF THE COTTONTAIL. J. Mamm. 40(3): 443. Aug. 1959.

A cottontail shot near Urbana, Ill., on Jan. 17, 1958 was found to be carrying 13 embryos in an advanced stage of development. Measurements indicated that parturition would have probably occurred about Jan. 26, 1958. A check of 34 cottontails made during the last week of Jan. indicated that mid-winter breeding in central Ill. was not prevalent.

Myers, K., and W. E. Poole. (C.S.I.R.O., Field Sta., Albury, New South Wales. A STUDY OF THE BIOLOGY OF THE WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.), IN CONFINED POPULATIONS. C.S.I.R.O. Wildl. Res. 4(1): 14-26, 4 figs. + 1 pl. July 1959.

Summary: Adult rabbits in confined populations inhabit a well-defined home range within which they rest, feed and breed. The av. area of home range lessens as rabbit numbers increase, and the home ranges of adult ♀♀ are less than those of adult ♂♂. Rabbits form small groups during the breeding season, usually consisting of 2 or 3 ♂♂ and several ♀♀. A strict dominance-hierarchy is established among the ♂♂. The more dominant ♂♂ roam over larger areas than their subordinates and eject foreign ♂♂, thus exhibiting territorial behavior.

Mykytowycz, R. (Wildl. Surv. Sect., C.S.I.R.O., Canberra.) SOCIAL BEHAVIOUR OF AN EXPERIMENTAL COLONY OF WILD RABBIT ORYCTOLAGUS CUNICULUS (L.). II. FIRST BREEDING SEASON. C.S.I.R.O. Wildl. Res. 4(1): 1-13, 6 figs. July 1959.

From summary: Continuing the report on social behavior [For I, see WR 93: 42] of Australian wild rabbit, developments during the first breeding season are described. During the breeding season, which lasted 7 months (June-Dec.), the dominant ♀ littered at regular monthly intervals, the second ranking ♀ 6 times, and the third ranking ♀ only 5 times. The survival rate of the juveniles was highest for those of dominant ranking ♀♀ (56%) and lowest for those of lowest ranking ♀♀ (31%). Differences in growth rate of progeny and their sexual maturation followed this pattern. Seasonal variations, however, influenced both growth rate and the attainment of sexual maturation. The growing population split into separate groups, each with its own dominant pair and its own territory. There were indications of the existence of a family as well as a group unity. During the breeding season, 139 young were born to 3 adult and 3 juvenile ♀♀, but only 59 survived to maturity. Climatic conditions proved to be the major factor controlling population numbers, followed by avian predation.

Newman, Duane E. (Iowa Coop. Wildl. Res. Unit, Ames.) FACTORS INFLUENCING THE WINTER ROADSIDE COUNT OF COTTONTAILS. J. Wildl. Mgt. 23(3): 290-294, 2 figs. July 1959.

Morning and evening roadside routes were driven in 2 s. Iowa counties to determine the effects of time of day, weather factors and vegetation on the cottontail (Sylvilagus floridanus) count. Seventy percent of the rabbits were observed during morning counts and 30% during evening counts. A greater percentage of the variation in evening counts can be associated with weather factors than for morning counts. Graphic and statistical analysis indicates that most weather factors affect the count but that snow used alone as a predictor variable is nearly as good as using all weather factors in adjusting cottontail-count results.--Auth. abst.

Rowley, Ian. (Wildl. Surv. Sect., C.S.I.R.O., Canberra, Australia.) BAIT SIZE FOR RABBITS. C.S.I.R.O. Wildl. Res. 4(1): 27-30. July 1959.

Summary: "The factors affecting bait size for poisoning rabbits are discussed, and the results of 2 experiments show that rabbits prefer a bait weighing about 5 g (11/16 in. cube) to baits less than 2 g (1/2 in. cube) or as large as 10 g (7/8 in. cube)."

Shields, Paul W. ECOLOGY AND POPULATION DYNAMICS OF THE BRUSH RABBIT ON THE NORTH SPIT OF HUMBOLDT COUNTY, CALIFORNIA. M. S. thesis, Humboldt State Coll. 98 p., 12 figs., 8 tables. 1958.

This study reports on movements of brush rabbits in a sand dune area based on observations of tagged individuals. In the study area the entire adult population was trapped and marked yielding information on population turnover and reproductive behavior.--C. F. Yocom.

RODENTS--MISCELLANEOUS

Anderson, Sydney. (U. Kans., Lawrence.) DISTRIBUTION, VARIATION, AND RELATIONSHIPS OF THE MONTANE VOLE, MICROTUS MONTANUS. U. Kans. Publ., Mus. Nat. Hist. 9(17): 415-511, 12 figs. Aug. 1959.

An account of the 16 subspecies of Microtus montanus. Distribution of this vole is correlated with the presence of grass. This explains its montane occurrences in the south and intermontane occurrences in the north. This change in altitude of occurrence exceeds the corresponding change in altitude of the life-zones. The presence of other species of Microtus seems to be an important factor in limiting the distribution of M. montanus. Anderson recognizes sex, age, season of capture, and methods of sampling as some of the more obvious sources of variation within a species other than "individual" variation and geographic variation. [Portions of his sections on variations may be considered as essays on bias resulting from sampling techniques which do not recognize these sources of variation. These sections and his treatment of the concept of subspecies should be required reading for individuals (particularly taxonomists) sampling mammal populations.]

Bendell, J. F. (U. of B. C., Vancouver.) FOOD AS A CONTROL OF A POPULATION OF WHITE-FOOTED MICE, PEROMYSCUS LEUCOPUS NOVEBORACENSIS (FISCHER). Can. J. Zool. 37(2): 173-209, 8 figs. Apr. 1959.

Mice were introduced to an island before and after food was supplied in excess of food consumed. The population of mice on the experimental island with food in excess is compared with populations of mice on the same island before the addition of food, on an adjacent island, and on the mainland. Before food was supplied in excess, death rate (death and dispersal) greatly exceeded birth rate and the population failed. After food was supplied in excess, death rate of the second introduction decreased and population increased to greatly exceed the density of mice on the control island. The increased density of mice on the experimental island is the result of a decreased death rate, particularly in mice from birth to approximately 1 month of age. Increased birth rate may also be a factor. Food supply regulates the abundance of white-footed mice by affecting death rate and possibly birth rate. The most important effect of food supply is on the survival of young from birth to approximately 1 month of age. Evidence is presented that intraspecific strife for space occurs in relatively dense population. Intraspecific strife for space may regulate population of mice beyond the level of abundance determined by the supply of food.--Auth. abst.

Blair, W. Frank, and T. E. Kennerly, Jr. (U. Texas, Austin.) EFFECTS OF X-RADIATION ON A NATURAL POPULATION OF THE WOOD-MOUSE (PEROMYSCUS LEUCOPUS). Texas J. Sci. 11(2): 137-149, 1 fig. June 1959.

Summary: "An attempt was made to upset the equilibrium between selection pressure and mutation pressure through irradiation of sexually mature ♂ woodmice (Peromyscus leucopus). In s.-central Texas a population was studied through the use of nest boxes. Following 2 yrs. observation, 1952-53 and 1953-54, gonadal X-ray dosage of 700 r commenced and continued through the 1956-57 season. Population dynamics of this species were pertinent to the methods used and the results obtained and agreed generally with studies of other spp. of this genus. Dispersal distance is short and replenishment of the study-population through

immigration is regarded as slight. High population turn-over and short life span indicate high environmental pressure. Mated pairs are relatively permanent during the breeding season which occurs in winter in south Texas. The woodmice indicated a preference for tree boxes over ground boxes. Principal irradiation effects were reduction in litter size and reduction in population numbers; both are attributed to radiation-induced lethal mutations. The 'critical mutation rate' is thought to have been approached."

Connor, Paul F. THE BOG LEMMING SYNAPTOMYS COOPERI IN SOUTHERN NEW JERSEY. Mich. State U. Mus. Publ., Biol. Ser. 1(5): 161-248, 4 pls., 4 figs. July 1959.
The results of a 4-year study with material on the morphology, habitat, population, home range, growth and development, food habits, nests and behavior of the bog lemming. Includes a 74-item bibliography.

Ferris, D. H., H. E. Rhoades, and L. E. Hanson. (Dept. Path. & Hyg., U. Ill., Urbana.) THE ISOLATION OF LEPTOSPIRA HYOS FROM A NEW HOST, PEROMYSCUS MANICULATUS. Cornell Vet. (Ithaca) 49(3): 344-349. July 1959.
In a serologic and cultural study of 101 wild rodents of 6 species from central Ill. farms, Leptospira hyos was isolated from the kidney of the deer mouse (Peromyscus maniculatus).

Gunderson, Harvey L. (U. Minn., Minneapolis.) RED-BACKED VOLE HABITAT STUDIES IN CENTRAL MINNESOTA. J. Mamm. 40(3): 405-412, 3 figs., 1 pl. Aug. 1959.
The data presented are a part of a study of small mammal populations at Cedar Creek Forest, Anoka County, Minnesota. The live-trapping area of 5.0 acres, with 81 traps spaced 52 feet apart was in a tamarack-white cedar bog. The study extended over a period of 7 years (1949-1955). Trapping periods of five days (four nights) extended from early May to the first part of October. In all, there were 14,580 trap-nights. A total of 428 voles were marked and weighed; data on 25 dead unmarked individuals are also included. A frequency index (calculated for each station) was derived by multiplying the number of individuals caught at a station by the number of years they occurred at that station. These indices were grouped and represented on a map. Clethrionomys occupied mostly the white cedar area with sparse to medium cover. Their distribution was most closely correlated with the presence of stumps, rotting logs and root systems in loose forest litter and sphagnum.--From auth. abst.

Huey, Laurence M. (San Diego Soc. Nat. Hist., San Diego, Calif.) LONGEVITY NOTES ON CAPTIVE PEROGNATHUS. J. Mamm. 40(3): 412-415. Aug. 1959.
Records, habits, and length of life of two species of Pocket Mice kept in captivity. Both were adult when captured. Perognathus parvus mollipilosus lived 4 years and 6 months and Perognathus fallax fallax lived 8 years and 4 months with a diet of bird seed and no fluid water given to them during this confinement.--Author.

Julander, Odell, Jessop B. Low, and Owen W. Morris. (Intermtn. For. & Range Exp. Sta., Ogden, Utah.) INFLUENCE OF POCKET GOPHERS ON SEEDED MOUNTAIN RANGE IN UTAH. J. Range Mgt. 12(5): 219-224, 3 figs. Sept. 1959.
From summ. Two typical overgrazed tar-weed flats heavily infected with pocket gophers were reseeded to a mixture of grasses. On one area the gophers were closely and effectively controlled; on the other, they were left undisturbed. An excellent stand of grass seedlings emerged on both areas. Studies from 1952 through 1957 showed a downward trend of grass stands and yields on the uncontrolled area and establishment of a full grass stand on the controlled areas. Pocket gophers damaged grass stands in 5 different ways which are described...the most important of which is the destruction of root crowns and stem bases of well established grass clumps. Some degree of gopher control appears necessary for establishment and maintenance of good seeded stands of grasses on depleted range having dense populations of pocket gophers.

Klein, Harold George. ECOLOGICAL RELATIONSHIPS OF PEROMYSCUS LEUCOPUS NOVEBORACENSIS AND P. MANICULATUS GRACILIS IN CENTRAL NEW YORK. Ph.D. thesis, Cornell U. 101 p. 1959. [From long abstract in Dissertation Abstracts 20(1).]
Trapping studies were made in 3 woods near Ithaca, N. Y., where both species occurred. L. C. Cole's method of calculating a coefficient of interspecific association was used to measure the association between species of mouse and species of conspicuous plants. Populations of mice were estimated. Behavior and water consumption were studied in search for interspecific differences. The chief finding was that P. leucopus was more closely associated with plants of the oak stage, whereas P. m. gracilis was more closely associated with plants of the hemlock, white pine, and northern hardwoods forest type, which is climax for the area. Beech-maple woods were places of ecological overlap between the species. Possible explanations for the ecological separation are considered.--W. H. Stickel.

Opsahl, James Frederic. THE EFFECT OF ENVIRONMENTAL TEMPERATURE ON THE ENERGY METABOLISM OF THE RED-BACKED MOUSE, CLETHRIONOMYS GAPPERI (VIGORS). Ph.D. thesis, U. Ill. 45 p. 1959. [From long abstract in Dissertation Abstracts 20(1).]
Study of energy metabolism at 3 temperature levels and 2 photoperiods. Energy per gram of adult weight decreased with increasing body weight at a given temperature. There were no significant differences between existence energy levels at 9.25 and 15 hour photoperiods, or between mice caught the year before and the year after a population crash. Weight loss that could be tolerated was between 19 and 22%. Minimum tolerable temperature was about 3°C. All mice died at 38°C. Temperature extremes in the range of the mice are greater, but are reduced by habitat niche and habits of the mice. Mice had excess energy at normal temperatures, and one mouse used this excess to run 10.56 miles per day on an activity wheel. No metabolic differences were found between 2 subspecies used in the experiments.--W. H. Stickel.

Sands, James L., and James S. Findley. (N. Mex. U., Albuquerque.) THE RELATIONSHIPS OF TWO SUBSPECIES OF POCKET GOPHER IN CENTRAL NEW MEXICO. J. Mamm. 40(3): 331-337, 3 figs. Aug. 1959.
The morphological and ecological relationships of Thomomys bottae actuosus and T. b. connectens in Bernalillo Co., N. Mex., are discussed. The former inhabits mountains, the latter valleys. The two are markedly different and their geographic ranges abut. One hybrid population was discovered. This relationship is thought to be indicative of secondary intergradation. Possible explanations for this situation are advanced.--J. S. Findley.

Williams, Olwen. (U. Colo., Boulder.) FOOD HABITS OF THE DEER MOUSE. J. Mamm. 40(3): 415-419. Aug. 1959.
Analyses of the stomach contents of 122 deer mice, Peromyscus maniculatus, trapped in Wyoming and Colorado in 1955 and 1956, revealed that the starchy interiors and integuments of seeds comprised roughly two-thirds to three-fourths of the material examined. Much of this was conifer mast. One-tenth to one-fifth of the material identified consisted of insect and arachnid remains, while fruits, fungi, annelids, and green vegetation made up the remainder.--Author.

RATTUS AND MUS

Barnett, S. A. PHYSIOLOGICAL EFFECTS OF "SOCIAL STRESS" IN WILD RATS. I. THE ADRENAL CORTEX. J. Psychosomatic Res. 3(1): 1-11, pls. 1958. [From J. Mamm. 40(3).]

Richter, Helmut. ON THE WINTER INCREASE OF HOUSE MOUSE (MUS M. MUSCULUS L.) AND THE FIELD MOUSE (MICROTUS ARVALIS (PALLAS)) IN CENTRAL MECKLENBURG. Archiv. Freunde Naturgesch. (Mecklenburg) 3: 133-140. 1957. [From J. Mamm. 40(3).]
In German.

SCIURIDS

Bartholomew, George A., and J. W. Hudson. (U. Calif., Los Angeles.) EFFECTS OF SODIUM CHLORIDE ON WEIGHT AND DRINKING IN THE ANTELOPE GROUND SQUIRREL. J. Mamm. 40(3): 354-360, 2 figs. Aug. 1959.

The antelope ground squirrel, of w. North America, cannot survive on metaboli water alone. In the laboratory its mean water consumption is about 12% of body weight per day. It maintains weight indefinitely while drinking 0.8 molar NaCl (about 1.4 times as saline as sea water) and can extract sufficient water from 1.0 molar NaCl to extend survival many days. This capacity to utilize concentrated salt solutions exceeds that of any other mammal so far studied. Fluid consumption is greatest on 0.25 molar NaCl and decreases with higher molarities. Survival under natural conditions apparently depends on tolerance of dehydration production of extremely hypertonic urine, tolerance of moderate hyperthermia, avoidance of excessive heat stress, and obtaining moisture from food to supplement metabolic water.--C. A. Bartholomew.

Evans, Frederick Read. (U. Utah, Salt Lake City.) FLAGELLATE POPULATIONS IN THE CAECUM OF THE ANTELOPE GROUND SQUIRREL. Trans. Am. Micros. Soc. 78(1): 44-48. 1959. [From Biol. Abst. 33(10).]

Caecal smears from 52 ground squirrels (Citellus l. leucurus) trapped in the Great Salt Lake desert were examined for flagellates. All host animals were parasitized. Monocercomonoides pilleata was found in 100% of ground squirrels, Hexamastix muris in 73%, Chilomastix magna in 29%, Tritrichomonas muris in 4%, and Octomitus pulcher in 2%. Hexamitus teres, a flagellate found in some other spp. of ground squirrels, was not observed in C. leucurus. No significant differences in protozoan populations in hosts collected in the various trapping areas were observed. There appeared to be no ill effects upon the host. The transmission of parasites is discussed.--Author.

Lutz, H. J. (Alaska For. Res. Center, Juneau.) EFFECT OF RED SQUIRRELS ON CROWN FORM OF BLACK SPRUCE IN ALASKA. Alaska For. Res. Center Tech. Notes 42. 3 p., 2 figs. Aug. 1958.

Black spruce, Picea mariana, in Alaska commonly presents a crown form (tufted or tasseled in appearance) that seems to be unique among conifers and often aids in the identification of this species. Observations reveal that the branchless stem segments in the upper part of the crowns have resulted from pruning by red squirrels, Tamiasciurus hudsonicus. Red squirrels have also been observed cutting off cone-bearing branches and storing them in caches. The bare stem segments or gaps in the crown below the tuft of cone-bearing branches at the top affords these cones a measure of protection from fire damage.

Moore, Joseph Curtis. (Am. Mus. Nat. Hist., N. Y. 24.) RELATIONSHIPS AMONG LIVING SQUIRRELS OF THE SCIURINAE. Bul. Am. Mus. Nat. Hist. 118(4): 153-206, 7 figs. July 1959. $1.00, paper.

Technical study of cranial structure and classification of all living squirrel except flying squirrels. Use of the number of septa in the bullae, and use of other new or little exploited characters of the skull, enabled Dr. Moore to present a refined classification of the tribes and subtribes of tree squirrels and ground squirrels of the world. Tribes and subtribes are defined, diagnosed, keyed out and their relationships are discussed. Convergence, divergence, and conservatism are considered in relation to ecological niches. A classification of the Sciurinae lists all groups down to genera.--W. H. Stickel.

Surdacki, Stanislaw. INVESTIGATIONS ON TWO POPULATIONS OF GROUND SQUIRRELS (CITELLUS SUSLICA GUELD.) IN LUBLIN [POLAND]. Acta Theriologica, Polska Akad. Nauk 2(10): 203-234. Dec. 1958. [From J. Mamm. 40(3).]

In German.

BEAVER

Neff, Don J. (Ariz. Game & Fish Dept., Phoenix.) A SEVENTY-YEAR HISTORY OF A COLORADO BEAVER COLONY. J. Mamm. 40(3): 381-387, 2 figs., 1 pl. Aug. 1959.

The history of Moraine Colony, Roaring Fork, near Long's Peak, Colo., was traced from 1885 to 1922 through the published reports of Enos A. Mills and E. R. Warren. Beaver scars on lodgepole pines near the colony provided an index to beaver activity for the period from 1920 to 1955. The colony structures have suffered no major damage for a period of 60 years but the colony is no longer occupied in winter, apparently because of lack of food.--Author.

BEAVER--Continued

Richard, P.-B. THE FEET OF BEAVER (CASTOR FIBER). Mammalia (Paris) 22(4): 566-574, illus. Dec. 1958. [From J. Mamm. 40(3).]
In French.

Smith, Kenneth C. (La. Wild Life & Fisheries Comm., New Orleans.) BEAVER IN LOUISIANA. La. Cons. 11(7/8): 12-13, 22-23. July-Aug. 1959.
Beaver were confined to Amite and Comite River drainages of La., in 1931. Restocking efforts of period 1938-58 netted 205 beaver which were released at sites. Beaver now present in 31 of 64 La. parishes. Estimated population west of the Miss. River was 500; estimated population in the Florida parishes was 4,000 to 5,000.

MUSKRAT AND NUTRIA

Adams, Arthur W. (Rugby, N. Dak.) MARSHES AND MUSKRATS. N. Dak. Outdoors 22(1): 12-14. July 1959.
Correlations between statewide fall index of water areas and muskrat houses per square mile as determined by aerial counts not as apparent as similar studies in the Turtle Mountains. Graphs of statewide results for period 1948-58 indicate that water area index in 1958 was 75% below 11-year av. For 1958, the muskrat population index was 79% below av. Muskrat sex and age ratios from 1958-59 trapping season data indicated higher production than normal.

Galbreath, Edwin C. (U. Kans., Lawrence.) GROWTH AND DEVELOPMENT OF TEETH IN THE MUSKRAT. Trans. Kans. Acad. Sci. 57(2): 238-241, 1 fig. 1954.
Analysis of growth and wear of teeth in muskrats based on dissection and examination of 15 specimens of known age, and of several dozen skulls whose age could be estimated from field data.

Hoffmann, Max. DIE BISAMRATTE; IHRE LEBENSGEWOHNHEITEN, VERBREITUNG, BEKÄMPFUNG UND WIRTSCHAFTLICHE BEDEUTUNG. [THE MUSKRAT; ITS LIFE HISTORY, DISTRIBUTION, CONTROL AND ECONOMIC IMPORTANCE.] Akad. Verlagsgesell. Verlag Dr. Paul Schöps, Leipzig. 267 p., 128 figs. 1958. [From review by Paul L. Errington in J. Mamm. 40(4).]
In German. It is as a reference work that the book should be most useful for mammalogists. The sections on food habits, diseases and parasites, predatory enemies, social relationships and movements consist more of presentation of individual facts than pertinent generalizations. The section dealing with the spread and distribution of the muskrat in Eurasia and that dealing with German control measures should be of importance for reference purposes. There are 42 closely packed pages of bibliography. However, North American and European literature outside of Germany is handled indifferently. Lacking is an over-all treatment of population dynamics and ecology of the muskrat.

BEARS

Klein, David R. (US F&WS, Petersburg, Alaska.) TRACK DIFFERENTIATION FOR CENSUSING BEAR POPULATIONS. J. Wildl. Mgt. 23(3): 361-363. July 1959.
Testing of the effectiveness of the track-count method for censusing brown bears (Ursus arctos) was done on Alaska salmon (Salmo spp.) streams by differentiating bears on a basis of variation in track size. Environmental variables which could not be evaluated were found to influence the distribution of bears and rendered the method ineffective as a population index except as an indicator of relative or seasonal abundance on small areas.--Auth. abst.

Morse, Marius A. (Dakota, Minn.) HIBERNATION AND BREEDING OF THE BLACK BEAR. J. Mamm. 18(4): 460-465. Nov. 1937.
Narrative account of 2 hibernating families of bears in Minn. observed during severe winter period (Jan.-Apr. 1936). Activity of adults and cubs and weather conditions noted for each visit.

RACCOON, RINGTAIL, COATI

Johnson, J. I., Jr., and K. M. Michels. (Marquette U., Milwaukee, Wis.) DISCRIMINATION OF SMALL INTERVALS AND OBJECTS BY RACCOONS. Animal Behaviour 6(3/4): 164-170, illus. 1958. [From Biol. Abst. 33(10).]
Experiments using the Klüver-Wisconsin General Test Apparatus were conducted with raccoons to determine their visual discrimination abilities in comparisons with other species. Raccoons were found capable of discriminating visually the smallest sizes of test objects used in this situation. Discrimination of all sizes of objects improved with experience.--MDS.

Menges, Robert W., Robert T. Habermann, and Howard J. Stains. A DISTEMPER-LIKE DISEASE IN RACCOONS AND ISOLATION OF HISTOPLASMA CAPSULATUM AND HAPLOSPORANGIUM PARVUM. Trans. Kans. Acad. Sci. 58(1): 58-67, 4 figs. 1955.
During an epizootic which occurred among raccoons in e. Kans., 5 raccoons were obtained for study. Symptoms, serologic and culture results, and pathological findings are presented. Histoplasma capsulatum was isolated from 4 of the raccoons, and Haplosporangium parvum was isolated from 2.--From authors' summ.

Stains, Howard J. (S. Ill. U., Carbondale.) A CLUE TO SPRING MOLT IN RACCOONS AS REVEALED IN ANALYSIS OF SCATS. Ill. Acad. Sci. Trans. 50: 257-258, 1 fig. 1957.
Based on 705 scats collected over a 2-yr. period. March is peak month of molt; raccoon pelt is in prime condition in late Dec. through Jan.

MUSTELIDS

Benson, D. A. (Dept. Lands & Forests, Truro, Nova Scotia.) THE FISHER IN NOVA SCOTIA. J. Mamm. 40(3): 451. Aug. 1959.
The fisher is again a part of the fauna of Nova Scotia as a result of releases made in 1947-8.

Coulter, Malcolm W. (Me. Coop. Wildl. Res. Unit, Orono.) SOME RECENT RECORDS OF MARTENS IN MAINE. Me. Field Nat. 15(2): 50-53, 1 map. April 1959.
Based upon confiscated martens and reports of field personnel. Martens have increased during 22 yrs. of protection and are found in Me. in an area extending n. from Greenville to the Canadian border and e. of the Aroostook Valley. Locations of 32 of the 72 known specimens taken during past 10 yrs. are plotted.

Neal, E. G., and R. J. Harrison. REPRODUCTION IN THE EUROPEAN BADGER (MELES MELES L.). Trans. Zool. Soc. London 29(2): 67-130. Nov. 1958. [From J. Mamm. 40(3).]

Van Gelder, Richard G. A TAXONOMIC REVISION OF THE SPOTTED SKUNKS (GENUS SPILOGALE). Bul. Am. Mus. Nat. Hist. 117(5): 229-392, illus, maps. 1959. [From Biol. Abst. 33(12).]
Results of the study indicate that all living spotted skunks are referable to a monotypic, small-sized sp., Spilogale pygmaea, with a restricted range; and a polytypic, large-sized sp., S. putorius, of wide distribution, with 15 sspp. The systematic treatment includes synonymy, descriptions, taxonomic history, discussion of range and variation, data on collection localities, etc. Many tables of biometric data are included.--From abst. by A. K. Winner.

DOGS, WOLVES, FOXES

Ellis, Ralph J. (Okla. State U., Stillwater.) FOOD HABITS AND CONTROL OF COYOTES IN NORTHCENTRAL OKLAHOMA. Okla. State U. Publ. 56(2), Arts. and Sci. Studies, Biol. Ser. no. 8. 31 p., 4 figs. Jan. 1959.
Tabulations were made of 762 coyote scats collected from 2 habitats in n. cent. Tex. during 1952-3. Cotton rats and rabbits were staple coyote foods throughout the year in both prairie and the prairie-woodland areas. Wood rats, pine mice, w.f. mice, livestock flesh, poultry, small birds and insects were important food items. Coyotes are not a significant threat to game populations.

Coyotes prefer small herbivores--dislike carnivores, omnivores, insectivores and cold blooded vertebrates. An extension type predator control program, on an experimental basis, is suggested, and a policy of not reinstating bounties. --From auth. summ.

Fitch, Henry S., and Robert L. Packard. (U. Kans., Lawrence.) THE COYOTE ON A NATURAL AREA IN NORTHEASTERN KANSAS. Trans. Kans. Acad. Sci. 58(2): 211-221, 3 figs. 1955.

Coyote food habits, activity and depredations in Kans. For 118 scats examined, there were 52 categories of food items with cottontail rabbit being the most frequent, followed by cow and cotton rat.

Gier, H. T., and D. J. Ameel. (Agr. Exp. Sta., Manhattan, Kansas.) PARASITES AND DISEASES OF KANSAS COYOTES. Kans. Agr. Exp. Sta., Manhattan, Tech. Bul. 91. 34 p., 8 figs. Apr. 1959.

Over an 11-year period, 1,850 coyote carcasses, collected from 52 counties in Kans., were examined for parasites and diseases. Taenia pisiformis occurred in 95% of the coyotes; Physaloptera rara -- 50%; Toxascaris leonina -- 33%; and Ancylostoma caninum -- 25%. Eight species of fleas, 3 species of ticks, 9 species of mites and 1 species of louse were found.--From auth. summ.

Pringle, Larry. (U. Mass., Amherst.) STRANGER FROM THE WEST. Mass. Wildl. 10(3): 12-13, 18-19, 2 figs. May-June 1959.

General notes on life history of coyote. Gradual migration into the NE. is summarized. Conn. reported its first coyote in 1958. Four records dated 1957-8 are mentioned for Mass.

Tembrock, Günter. ON THE PERIODIC ACTIVITY OF VULPES AND ALOPEX. Zool. Jahrbücher (Jena) 68(1-2): 297-324. Nov. 1958. [From J. Mamm. 40(3).]

Wood, John E., and David E. Davis. (Jacksonville U., Jacksonville, Fla.) THE PREVALENCE OF RABIES IN POPULATIONS OF FOXES IN THE SOUTHERN STATES. J. Am. Vet. Med. Assn. 135(2): 121-124. July 15, 1959.

Foxes were caught in 22 counties of Fla. and Ga. from 1952-7. The heads and salivary tissues were examined by the mouse-inoculation test. Many of these counties had reports of rabies for several years. Rabies virus was isolated from brain tissue of 32 (3.1%) of 1,026 red and gray foxes. Counties that reported rabid foxes had somewhat higher fox populations than did other counties. Examining a small sample of foxes is not a satisfactory means for detection of rabies.--From authors' summ.

CATS

Merrifield, George C. (Okla. Game & Fish Dept., Fairview.) OCCURRENCE OF A MOUNTAIN LION IN OKLAHOMA. Proc. Okla. Acad. Sci. 34: 75, 1 fig. 1953.

Plaster cast of unknown animal compares favorably with pad print of Felis concolor. Observer followed tracks for approximately 300 yds. across plowed field. Location and date: near Canton Reservoir, Canton, Okla. on March 13, 1953.

Robinette, W. Leslie, Jay S. Gashwiler, and Owen W. Morris. (US F&WS, Denver, Colo.) FOOD HABITS OF THE COUGAR IN UTAH AND NEVADA. J. Wildl. Mgt. 23(3): 261-273. July 1959.

In this study 277 cougar (Felis concolor) intestinal tracts and scats and 275 stomachs containing food remains were analyzed. Two seasons--"winter" and "summer" were recognized. Mule deer was by far the most important food, making up nearly 80% of the "winter" food and about half during "summer." Porcupine made up about 10% while other items such as domestic livestock, lagomorphs, beaver, squirrels (Citellus spp.), mice, elk, coyote, bobcat, skunk and grasses made up the remainder. Adult male deer appeared to be killed more frequently than their proportionate numbers in the herds during "winter." Rough computations indicated that a cougar may kill one deer per week on the average during "winter." There is reason to believe that the summer rate may be even higher owing to meat spoilage. A number of observations on the hunting habits of cougars are recounted.--W. L. Robinette.

BIG GAME, GENERAL

Altmann, M. (Kenyon Coll., Gambier, Ohio.) SOCIAL INTEGRATION OF THE MOOSE CALF. Anim. Behaviour 6(3/4): 155-159. 1958. [From Biol. Abst. 33(10).]
Analysis is made of stages in the behavioral development of the young moose, Alces alces shirasi, and its process of socialization is contrasted with the wapiti calf. Due to the very limited locomotion of the moose calf during the neonate period, a close enduring bond is brought about between it and its dam. The enforcement of signals between mother and young and reactions to intruders are described. The first social contact of the moose-calf with other moose takes place during the rutting season of its dam when the territorial defences of the cow completely disappear. Later the moose-calf joins the loose winter aggregates along with its dam. An orphaned moose-calf will not be integrated with the herd and rarely survives the winter. The male yearling near his dam is treated as a rival by the moose bull while the female yearling experiences hostility from her own dam during the rut. Despite such temporary displacements, the yearling continues to be dependent on its dam usually for an additional year after weaning has ended.--MDS.

Altmann, Margaret. (Kenyon Coll., Gambier, Ohio.) GROUP DYNAMICS IN THE WYOMING MOOSE DURING THE RUTTING SEASON. J. Mamm. 40(3): 420-424. Aug. 1959.
Aspects of group and individual behavior of Wyo. moose connected with the reproductive behavior are studied. The small all-bull groups formed in the summer gradually dissolve during the pre-rut in August. Tussles give way to more serious encounters. The mature bulls enter rutting conditions earlier than the younger ones. Special behavior patterns of the bulls at this time include the build-up in form of display, the challenger gait, the mock-battle, displacement feeding, activation of a wallow, the fight with rivals and the driving and mating stage. Serious battles ensue only when the rivals are fairly matched in weight and aggressiveness. The behavior of the moose cows during the rut is characterized by a "calling search" for a bull, by a period of delay and coyness, and by occasional cow battles with intruding cow moose, usually centered around a moose wallow prepared by her mate. The difficult role of the juvenile moose in the mating areas is described. At times special non-aggression patterns provide greater tolerance between mature moose and the yearlings.--Author.

Beeler, D. A., D. A. Benson, and W. M. Langille. (Purdue U., W. Lafayette, Ind.) MINERAL ANALYSES OF LIVERS AND KIDNEYS OF MOOSE (ALCES AMERICANA). J. Wildl. Mgt. 23(3): 356-358. July 1959.
Quantitative spectrographic and colorimetric analyses of liver and kidney tissues of 16 unhealthy moose from Nov. Sc. and 10 healthy moose from Newf. for the elements cobalt, copper, molybdenum, and zinc resulted in the conclusion that the moose in both provinces take up and store similar quantities of these elements except cobalt, the higher content of cobalt being in the livers of Nov. Sc. moose.--Authors' summ.

Blankenburg, W., and H. Stocksmeier. HORMONBEHANDLUNG BEI EINEM PERÜCKENBOCK. [HORMONE TREATMENT OF A ROEBUCK WITH DEFORMED ANTLERS.] Z. Jagdwissensch. 4(2): 99-101, 2 figs. 1958.
In German. An interesting account of a castrated roebuck which failed to shed the velvet from its antlers. One injection of Anertan in April resulted in a loss of velvet and striking behavioral changes (including the acquiring of a territory and a doe). These changes continued until October. The following year the buck again failed to shed the velvet from its antlers and the treatment was repeated with similar effects.--V. F. Flyger.

Bonnemann, A. L. VERHINDERUNG VON ROTWILDSCHÄDEN. [REDUCTION OF CROP DAMAGE CAUSED BY RED DEER.] Landwirtschaftsverlag GmbH, Nr. 78 der Landwirtschaft, Hiltrup b. Münster [W. Germany]. 1957. Price 3.90 DM. [From abst. by V. Xylander in Z. Jagdwissensch. 4(1), 1958.]
In German. Description of all known methods for reducing crop damage. Contains information on nutrition, mineral and vitamin requirements of red deer, and feeding habits. Based upon extensive experience of author and a thorough knowledge of literature.--V. F. Flyger.

Borg, Karl. UNTERSUCHUNGEN AN 460 ZUGRUNDEGEGANGENEN REHEN IN SCHWEDEN. [EXAMINATION OF 460 DEAD ROE DEER IN SWEDEN.] Z. Jagdwissensch. 4(4): 203-208, 4 figs. Dec. 1958.

In German with English and French summaries. Causes of death were: weakened condition (mostly starvation), 58.7%; injuries (mostly from predators), 23.5%; and diseases (many identified), 17.8%.--V. F. Flyger.

Burckhardt, Dieter. ÜBER DAS WINTERSTERBEN DER HIRSCHE IN DER UMGEBUNG DES NATIONALPARKES. [WINTER MORTALITY AMONG ELK IN THE NATIONAL PARKS REGION.] Schweizer Naturschutz 23(1): 1-5. 1957. [Review by Rieck in Z. Jagdwissensch. 4(4), 1958.]

In German. Winter mortality among elk in the National Parks Region of Switzerland was unknown prior to 1945. With growth of elk population, incidents of winter mortality due to starvation occurred. Bark peeling and overbrowsing has become severe. Recommended solution: increased shooting of elk.--V. F. Flyger.

Cabon, Krystyna. INVESTIGATIONS UPON THE VARIABILITY OF SKULLS OF THE WILD BOAR IN NORTHEAST POLAND. Acta Theriologica, Polska Akad. Nauk 2(6): 107-140. Aug. 1958. [From J. Mamm. 40(3).]

In German.

Cabon, Krystyna. MORTALITIES OF WILD BOAR IN BIALOWIEZA NATURE STATE PARK IN THE WINTER OF 1955-56. Acta Theriologica, Polska Akad. Nauk 2(4): 71-82. Aug. 1958. [From J. Mamm. 40(3).]

In German.

de Fremery, R. F. GESCHLECHTERGLEICHUNGEN BEIM REHWILD. [SEX EQUATION FOR ROE DEER.] Z. Jagdwissensch. 4(4): 177-180. Dec. 1958.

In German with English and French summaries. Estimation of sex ratio based upon numbers of each sex shot during the hunting season and changes in observed sex ratio of deer before and after the hunting season. [Basic formulae for natural mortality and recruitment factors are given.]--V. F. Flyger.

DESERT BIGHORN SHEEP COUNCIL, SECOND ANNUAL MEETING, APRIL 8-11, 1958. ii + 72 p., illus., mimeo. 1959. $2.00, paper, from Fred L. Jones, Calif. Dept. Fish & Game, 722 Capitol Ave., Sacramento 14, Calif.

Fifteen papers on the bighorn sheep and related subjects: 4 on hunting, 3 on water development, 3 on trapping injuries and disease, and 2 papers on bighorn physiology and behavior. Some findings can be mentioned: Nev. Hunter success for 5 years av. 36%--one hunter in three got his trophy. With 92 sheep taken during the period, the total population is believed to be unharmed. Ariz. No indication that 6 years hunting has had any bad effect on the bighorn. N. Mex. During 1954 and 1955 seasons 17 bighorn were killed by 26 hunters--about 2 out of 3 hunters got their trophies. No brucellosis found, but 8 species of parasites were recovered at the checking stations. Barbary sheep (Ammotragus lervia) were harvested in 1955-7. Sixty-two were taken by 143 hunters. Again, no brucellosis was found, but 15 species of parasites were noted. Barbary sheep seem to be adaptable to several kinds of habitat. An interesting paper on the influence of trophy hunting on horn size of bighorns, presents among other items, the heredity of horn size in the bighorn. Wendall Swank, in this paper, prescribes a maximum harvest of 12% of the ♂♂ to permit young animals to replace those harvested. It takes at least 6 years for a ram to produce trophy horns.

A Calif. paper discusses water prospecting using plant indicators, livestock-wildlife competition for water, and the construction and maintenance of springs, wells and other water-holding structures. Natural and artificial tanks in Ariz. are discussed with some cost figures and construction details. Water catchments in Ariz. range in size from 1,000 to 2,000 gal.--205 have been built. The current 2,000 gal. rainfall catchment costs $1,500. "Every resident game animal has either been observed utilizing or is known to have utilized the Ariz. catchments."

The trapping papers reflect relatively high mortality and injury of trapped bighorns. Experiences using tranquilizers, chloral hydrate and the dart gun are mentioned. In a paper from Colo., an historical review of the bighorn status in

that state, indicates that disease and its control is of greatest importance to the management of bighorn sheep. The lungs are consistently the most common site of pathology encountered on postmortem examination of bighorn sheep. Several species of land snails are essential intermediate hosts for lungworms of the genus Protostrongylus occurring in Colo. Need for long-range research in the diseases of bighorns is stressed.

Dorst, Jean, editor. INVESTIGATION UPON THE PRESENT STATUS OF UNGULATES IN AFRICA SOUTH OF THE SAHARA. Mammalia 22(3): 357-503, illus. Sept. 1958.

Sixteen papers cover the status of ungulates in different regions of Africa south of the Sahara, excluding Ethopia and Somaliland. Papers range from brief impressionist notes to annotated species lists giving estimated numbers of animals. Each has been prepared by an authority on the area concerned. Half of the papers are in English, half in French. One paper entitled FAUNA OF SERENGETI NATIONAL PARK by G. H. Swynnerton gives notes on Tanganyika ungulates including their relative abundance, their distribution by habitat and their peak breeding periods. Appended to this paper is a list of the mammals found in various habitats in the park. The 14-page introduction in French by Dorst is more than a summary of the other papers: it is an essay stressing (1) the need for research into the biology of these ungulates and (2) the conservation of these animals. The parallel between the present status of African ungulates and that of big-game in North America half a century ago is obvious. There is one striking difference in attitude of the game administrators, however; the African stresses conservation, but unlike his American counterpart of the early twentieth century he also places considerable emphasis on research. This symposium should be important to anyone interested in African conservation.

Esser, Wolfgang. BEITRAG ZUR UNTERSUCHUNG DER ÄSUNG DES REHWILDES. [A CONTRIBUTION TO THE STUDY OF ROE DEER DIET.] Z. Jagdwissensch. 4(1): 1-40, 5 figs. 1958.

In German with long, informative English summ. Results of an enormous amount of work on the analysis (mineral, protein, and fiber content) of wild and cultivated plants are tabulated grossly and by chemical element content. Other detailed tables list plants preferred by roe deer, plants not eaten, and plants whose palatability is not known. Preference of roe deer for certain plants could not be related to the chemical composition of these plants. The details of seasonal feeding habits of roe deer are discussed and illustrated with graphs. Bibliography of 51 titles.--V. F. Flyger.

Flyger, V. F., and John Warren. (Md. Dept. Res. & Educ., Annapolis.) SIKA DEER IN MARYLAND--AN ADDITIONAL BIG GAME ANIMAL OR A POSSIBLE PEST. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 209-211. 1958 (1959).

Sika deer on James Island increased from 4-5 head in 1916 to 270 in 1957--a population density of 1 deer/acre. Overbrowsed range, severe weather and the consumption of poisonous substances resulted in a mass mortality (about 50%). Management includes increased harvesting and the establishing of food patches.

Fuller, W. A. (Can. Wildl. Serv., Whitehorse, Yukon.) THE HORNS AND TEETH AS INDICATORS OF AGE IN BISON. J. Wildl. Mgt. 23(3): 342-344, 2 figs. July 1959.

Characteristics of the horns and teeth that can be used in determination of the approximate age of bison are described in this paper. Five age-classes of ♂ bison and 4 age-classes of ♀ bison can be recognized in the field on the basis of horn growth. Tooth eruption and replacement permits the recognition of five age-classes separated by one year (0 to 4 years inclusive). Tooth wear permits recognition of an additional three age-classes, designated "young adult," "adult," and "aged," that cover the remainder of the life-span of the animals.--Author.

Gill, Janusz, and Zbigniew Jaczewski. KAPAZITÄT DER VERSCHIEDENEN TEILE DES VERDAUUNGSAPPARATES DES ROTHIRSCHES (CERVUS ELAPHUS L.) [THE CAPACITY OF VARIOUS PARTS OF THE DIGESTIVE TRACT OF RED DEER.] Z. Jagdwissensch. 4(4): 169-171, 1 fig. Dec. 1958.

In German with English and French summaries. Tables give absolute and relative weights, lengths and volumes of the sections of digestive tract and their contents.--V. F. Flyger.

Habeck, James R. (Ore. Coll. Educ., Monmouth.) A VEGETATIONAL STUDY OF THE CENTRAL WISCONSIN WINTER DEER RANGE. J. Wildl. Mgt. 23(3): 273-278, 1 fig. July 1959.

A vegetational study was made of the cent. Wis. winter deer range to determine the present status of 8 ground-layer species that comprise a large percentage of the winter deer browse in this area, and to check the observational hypothesis that the present level of winter deer activity is causing these ground-layer species to decrease in number. The data from 49 stands were arranged in phyto-sociological order by means of a presence index, based on understory species only. It was shown that the trees were correlated with this presence index, and that the order represents a successional change from dry, open communities to more nearly mesic and more shaded communities. The results show that most of the ground-layer browse species in the cent. Wis. deer range are not decreasing as a result of forest succession. A study of the modes of reproduction of these browse species indicates that most of them possess the ability to reproduce vegetatively from rhizomes or runners. These plants can withstand very heavy browsing. The disturbance of the rhizomes and runners by deer activity may lead directly to an increase in the number of the plants.--Auth. summ.

Hatch, R. D., D. H. Ferris, R. P. Link, and Jack Calhoun. (U. Ill., Urbana.) UNSATISFACTORY RESULTS WITH NICOTINE IMMOBILIZATION OF A DEER AND BRAHMA CROSSBRED CATTLE--TWO CASE REPORTS. J. Am. Vet. Med. Assn. 135(2): 92-93. July 15, 1959.

More research is needed to perfect the flying syringe method of capturing animals. This should be supplemented by progress reports of field investigators. Authors had poor success with solution purchased for the method, but had good success with an 80% solution they made up. Despite the good success in general on deer, bison and steers, both the 80% and a 95% solution gave poor results on certain individual animals. A deer (sp. undet.) of 160 lb. was not subdued by 2 shots but died in 12 hours. Three calves of about 550 lb. each were treated. One was immobilized after 3 hours and survived. One was immobilized after 3 hours and died after 12 hours. The third, which received the largest dose, was just violently stimulated and jumped a 7-foot fence.

Jaczewski, Zbigniew, and Janusz Gill. REGULIERUNG DES BLUTDRUCKES BEIM ROTHIRSCH (CERVUS ELAPHUS L.). [THE REGULATION OF BLOOD PRESSURE IN RED DEER.] Z. Jagdwissensch. 4(4): 171-177, 9 figs. Dec. 1958.

In German with summaries in English and French. The effects of chloral hydrate, acetylcholine and adrenalin on blood pressure, heart beat and vagus nerve were studied. Blood volume estimated at 4% of total body weight.--V. F. Flyger.

Jensen, Poul Valentin. PANSENINHALT DANISCHEN ROTWILDES. [RUMEN CONTENTS OF DANISH RED DEER.] Z. Jagdwissensch. 4(4): 164-167. Dec. 1958.

In German with summaries in English and French. Progress report on study of rumen contents describes methods of taking samples, handling, and making examination. The contents of 70 rumens from 2 districts were found to vary considerably according to the time of year.--V. F. Flyger.

Klein, David R. (Petersburg, Alaska.) SAINT MATTHEW ISLAND REINDEER RANGE STUDY. US F&WS, Spec. Sci. Rep.--Wildl. no 43. iii + 48 p., 26 figs. Feb. 1959.

Reindeer-range relationships on St. Matthew Island in the Bering Sea were studied during summer, 1957. Reindeer had increased from a stocking of 29 animals in 1944 to approximately 1,350 in 1957, an av. annual rate of 34%. Range studies indicated that the lichens and willows were over-utilized by reindeer on the winter range. Since harvest, at present, is economically impractical, it is recommended that the St. Matthew Island reindeer herd be used as an experiment in population dynamics and range ecology, with periodic population and range checks being made.

Kleinschmit, Richard. VERWANDTSCHAFTEN VON REHGEHÖRNEN UND IHRE BEDEUTUNG FÜR DIE HEGE. [FAMILIAL RELATIONSHIPS OF ROE ANTLERS AND THEIR SIGNIFICANCE TO MANAGEMENT.] Z. Jagdwissensch. 4(2): 57-69, 10 figs. 1958.
In German. Description of 8 classes of antlers and speculation (with no experimental basis) of heredity involved. A plan for improving antlers is presented.--V. F. Flyger.

Künzel. ZUM TANNENPROBLEM AUS DEM OSTSCHWARZWALD UND DER BAAR. Allg. Forstz. 14(17): 336-337. Apr. 25, 1959. [Bibliog. Agr. 23(8), Aug. 1959.]
In German. Effects of deer population on regeneration of Abies alba.

McKnight, Tom L. (U. Calif., Los Angeles.) THE FERAL HORSE IN ANGLO-AMERICA. Geog. Rev. 49(4): 506-525, 5 figs. + 1 map. Oct. 1959.
A brief historical summary of the introduction of the horse to America with discussion of the status of the feral horse in western North America today and prospects for the future. Estimates derived from a questionnaire mailed to some 900 persons in 21 states and 6 provinces indicate that there are from 17,330 to 33,660 feral horses in w. N. A. today and that they are on the decline. They are of limited economic value and tend to be deleterious to stock raising since "they trample spring grass, pollute watering places, sometimes injure cattle, entice domestic horses with 'the call of the wild', and compete with domestic stock for forage and water."

Mikola, P. FORESTRY AND REINDEER RAISING IN LAPLAND. Metsätaloudellinen Aikakauslehti 1: 10-12. 1959. [Bibliog. Agr. 23(8), Aug. 1959.]
In Finnish with English summary.

Mottl, Stanislav. DIE NAHRUNG DES REHWILDES. [NUTRITION OF ROE DEER.] Biologia, Bratislava Bd. 12(1): 29-43. 1957. [From review by Rieck in Z. Jagdwissensch. 4(4), 1958.]
In Czech with German summary. Results of browse studies, field observations of feeding animals and stomach analyses are tabulated, and applied to nutritional studies of roe deer at the research station. The preference of deer for food items changes according to environmental factors and physiological needs. A roe deer consumes about 1.5-2.0 kg. of browse per day.--V. F. Flyger.

Pimlott, Douglas Humphreys. REPRODUCTION, PRODUCTIVITY AND HARVESTS OF NEWFOUNDLAND MOOSE. Ph.D. thesis, U. Wis. 130 p. 1959. [From long abstract in Dissertation Abstracts 19(12).]
A moose-research program was conducted in Newf. from 1950 to 1956. Conclusions are based on 13,000 field observations of moose, on hunter-kill returns for a 13-year period, and on 2,017 mandibles and 561 uteri from hunters' kills. Thirty-seven percent of 107 ♀♀ yearlings were pregnant. The adult pregnancy rate was 76% when computed for the entire collection of uteri and 81% with Nov. data excluded. Regional differences in pregnancy rate were noted. The average twinning rate was 15% when based on field observations and 12% when based on uteri. Of 347 pairs of ovaries collected from yearling-and-older cows, 224 pairs were from pregnant cows and these contained 275 functional corpora lutea. The av. occurrence of 2 corpora lutea was almost twice as high as the occurrence of twins in utero. The moose kills in Newf., Sweden and Norway have increased steadily. In 1957, the area yields were one moose per 5, 4, and 6 sq. mi., respectively. Annual yields from Sweden indicate that 25% of fall population are taken. More ♂ moose are killed by hunters than are ♀ moose (in Newf., Sweden and Norway). Although Newf. fetal, observational and kill data indicate that there is a preponderence of ♂♂, there is reasonable doubt that the sex ratio departs from 50:50.

Post, George. (Wyo. Game & Fish Comm.) THE USE OF CURARE AND CURARE-LIKE DRUGS ON ELK (WAPITI). J. Wildl. Mgt. 23(3): 365-366. July 1959.
Three curare drugs were used as paralytic drugs on elk [Wapiti (Cervus canadensis)]. The drugs were administered intramuscularly. Flaxedil, a synthetic curare drug [V-phenenyltris (oxyethylene)-tris (trimethylammonium iodide)] was found to give good paralytic results. The dose rate was 1 mg. per 3.5-5.5 pounds of body weight. Paralysis occurred from 3-1/4 to 9 minutes and duration of paralysis from 37 to 14 minutes. Metubine iodide, a modified natural curare drug, [dimethyltubocurarine-chloride] given at the rate of 1 mg.

per 110 pounds of body weight caused paralysis in 18 minutes and duration of paralysis of 1 hour and 52 minutes when terminated with antagonist. D-tubocurarine, a natural curare drug given at the rate of 1 mg. per 75 pounds of body weight caused paralysis in 22 minutes and was terminated at 1 hour and 12 minutes with an antagonist. The curare antagonist, Tensilon [(3-hydroxyphenyl) dimethylethyl ammonium chloride] will terminate curarization except in cases of extreme overcurarization.--Auth. summ.

Pruitt, Wm. O., Jr. (Box 282, College, Alaska.) SNOW AS A FACTOR IN THE WINTER ECOLOGY OF THE BARREN GROUND CARIBOU (RANGIFER ARCTICUS). Arctic 12(3): 158-179, 7 figs. Sept. 1959.

Based upon field work conducted during 1957-8 in n. Saskatchewan and s. Northwest Territories. Study methods included the operation of 114 snow observation stations, the making of low altitude aerial surveys totalling 8,850 miles. Numerous ground observations made of caribou behavior in relation to snow conditions. The areas of heavy caribou concentration were characterized by snow cover that was soft, light, and thin (hardness range of 6.5 to 60 g./sq. cm. for forest stations and 50 to 700 g./sq. cm. for lake stations; density range of 0.3 to 0.20 for forest stations and 0.13 for lake stations; thickness range of 19 to 59 cm.). Areas of no caribou were characterized by snow cover that was sometimes soft but also could be very hard, dense and thick. Some of the relationships of snow to the evolution, behavior, species survival and management of caribou are discussed. Future research and indicated improvements in techniques are enumerated and discussed.

Riney, Thane, and Graeme Caughley. (N. Z. For. Serv., Wellington.) A STUDY OF HOME RANGE IN A FERAL GOAT HERD. N. Z. J. Sci. 2(2): 157-170, 6 figs. June 1959.

The movements of a small population of free-ranging feral goats were studied for 16 months. In the winter, adult ♂♂ went into the forest, leaving the nanny-kid herd in the more open area. In the latter herd, two groupings were recognized--the family group, and the larger more temporary associations formed within the herd. There was no antagonism between groups or associations, and although some aggressive behavior occurred among billies, no signs of dominance or leadership emerged. The boundary of a herd range is more in the nature of a band or zone than a line, and in this area it is apparently influenced by the availability of cover. The nanny-kid herd is considered the part of the population most suitable for the application of management and control measures.--From authors' summ.

Schard, A. ELKS AND ELK DAMAGE. Skogen (Stockholm) 46(11): 236-238. May 29, 1959. [Bibliog. Agr. 23(8), Aug. 1959.]

In Swedish. [Damage pertains to forests.]

Sergeant, David E., and Douglas H. Pimlott. (Fish. Res. Bd. Canada, Montreal.) AGE DETERMINATION IN MOOSE FROM SECTIONED INCISOR TEETH. J. Wildl. Mgt. 23(3): 315-321, 5 figs. July 1959.

Longitudinal sections of the permanent incisor teeth of Alces alces show growth layers in the cement. The layering results from rhythmic deposition of the cementoblasts. It was determined from an incisor of one known age animal that the layers are annual. The method has an accuracy of about ± 15% and shows that a previous method, based on wear of the molariform teeth, underestimates the ages of the older animals.--Authors' abst.

Valentinčič, Stane I. (Ljubljana, Yugoslavia.) BEITRAG ZUR KENNTNIS DER REPRODUKTIONSERSCHEINUNGEN BEIM ROTWILD. [CONTRIBUTION TO THE KNOWLEDGE OF REPRODUCTIVE PHENOMENA OF RED DEER.] Z. Jagdwissensch. 4(3): 105-130, 43 figs. 1958.

In German with English and French summaries. Contains much descriptive material on histology, gross appearance and size of ovaries, corpora lutea, and uteri. Pictures and measurements of various aged embryos. [An important paper with a series of microphotographs 48 x and 320 x of ovarian sections.]--V. F. Flyger.

Valentinčič, Stane I. DAS ROTWILD JUGOSLAWIENS. [YUGOSLAVIA'S RED DEER.] Z. Jagdwissensch. 4(4): 153-163, 9 figs. Dec. 1958.
In German with summaries in English and French. Yugoslavia's red deer number about 15,000 head. They are large animals and excellent trophies. Some are original stock and others have been introduced from foreign lands.--V. F. Flyger.

von Raesfeld, F. DAS ROTWILD. [THE RED DEER.] Verlag Paul Parey, Hamburg & Berlin. 386 p., 235 illus., 5 col. pls. 1957. (4th complete revision by F. Vorreyer.) Price 44 DM. [From review by Rieck in Z. Jagdwissensch. 4(3), 1958.]
In German. This is a rewritten and enlarged edition of an important work on the red deer which first appeared 35 years ago. It is considered to be an authoritative treatment and contains a wealth of information on this species pertaining to hunting, management, age determination, biology and the prevention of crop damage. Profusely illustrated.--V. F. Flyger.

DEER (Odocoileus)

Anon. CONTROLLING DEER. Branch of Predator & Rodent Control, 59 Temple Place, Boston 11, Mass. 4 p., 1 fig. June 1959.
Two types of deer-proof fences are described. The use of three "standard" deer repellents under summer and winter conditions is discussed.

Banasiak, Chester F. (Me. Dept. Inland Fisheries & Game, Orono.) DEER SEASON--1958. Me. Dept. Inland Fisheries & Game, Game Div. Leafl. Ser. 1(5). 12 p., illus. July 1959.
Presents tables of deer kill densities and deer sex ratios by counties in Me. for 1958 season and deer kill trend by counties, 1949-58. The proportion of bucks in the kill steadily increases from 50% in all sections at the beginning of both northern and southern seasons to a state-wide peak of 65% in mid-November. However, in the wilderness sections of the northern counties mid-November kill is normally 75% ♂♂.

Brunett, Louis E. (La. Wild Life & Fisheries Comm., Alexandria.) THE TENSAS DEER HERD. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 213-224. 1958 (1959).
The Tensas deer herd was almost eliminated by floods in 1927 and increased sufficiently in 30 years to warrant antlerless deer harvest. Age class, sex ratio, and deer browse data are presented. Of 134 deer checked, 105 were ♀♀, 28 were ♂♂ and one not sexed. For ♀♀, 44 were fawns, 16 were yearlings, and 45 were adults. For ♂♂, 15 were fawns, 3 were yearlings, 6 were adults, and 4 were not aged. Evidence of sex ratio 33 ♂♂ : 100 ♀♀ is supported by field observations of fawns.

Davey, Stuart P. (Va. Comm. Game & Inl. Fisheries.) VIRGINIA'S DEER MANAGEMENT PROGRAM. Va. Wildl. 20(8): 5-7, illus. Aug. 1959.
Highlights of Va.'s restoration program. In 1923 the harvest of whitetails was 793--in 1958 the harvest was 26,841.

Harlow, Richard F. (905 Camphor Lane, Deland, Fla.) AN EVALUATION OF WHITE-TAILED DEER HABITAT IN FLORIDA. Fla. Game & Fresh Water Fish Comm., Tech. Bul. no. 5. iv + 7-64 p., 14 figs. 1959.
Deer browse surveys were conducted from 1954-7 in the 7 major vegetation types of Fla. using the "Forage Weight Method of Range Inventory." These surveys were complemented by food habit studies and deer population estimates derived from track counts, annual kill data records, aerial census and other means were made for the vegetation types. The deer population data indicate that pine-oak uplands habitat supports the largest number of deer, and has the highest carrying capacity, with flat woods second and hammocks third. These 3 types support 85% of the total deer population of Florida. Management recommendations by cover types are included.

Hershkovitz, Philip. THE METATARSAL GLANDS IN WHITE-TAILED DEER AND RELATED FORMS OF THE NEOTROPICAL REGION. Mammalia (Paris) 22(4): 537-546. Dec. 1958. [From J. Mamm. 40(3).]

Holland, John B. (U. Ga., Athens.) LIVER FLUKES IN THE SOUTHEASTERN WHITE-TAILED DEER. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 224-227. 1958 (1959).

Distribution, life cycle, host-parasite relationships, transmission and control of Fascioloides magna--a parasite of white-tailed deer in the Southeast.

Hudson, Paul, and Ludvig G. Browman. (Mont. State U., Missoula.) EMBRYONIC AND FETAL DEVELOPMENT OF THE MULE DEER. J. Wildl. Mgt. 23(3): 295-304, 4 figs. July 1959.

Embryos and fetuses of the Rocky Mtn. mule deer were collected from the National Bison Range, Moiese, Mont. A pre-natal-growth curve was established using C-R or F-R lengths and age in days of 5 known age specimens. More than 175 specimens of unknown age were aged by use of this growth curve. Descriptions and measurements of external characters and morphological land marks were made including features useful in the field. The approximate time of appearance of major external characters is included. The calculated peak of the breeding season of mule deer on the National Bison Range was found to be Nov. 20 plus or minus 7 days. Eighty-seven percent of does over 1 year of age collected in Dec. and later were pregnant with a fetus-doe ratio of 1.66. Implantation is estimated to occur 27-29 days after breeding.--From authors' abst.

Murphy, Dean A. CAUSE OF DEATH -- ACCIDENTAL. Mo. Cons. 20(9): 1-3. Sept. 1959.

A summary by causes of 2,873 non-seasonal deer mortalities for the period June 1950 through Dec. 1958. Highway accidents ranked high (54.7%), followed by poaching (11.3%), undetermined (9.8%) and dogs (5.9%). Other data collected were: breeding potential for 86 late winter-early spring adult ♀ kills -- 1.74 fawns/pregnant doe; mortality by months -- Nov. was peak month; age and sex composition of the kill. Over-all sex ratio has been nearly even... ♀♀ outnumber ♂♂ in most months except during the breeding season. During Oct.-Dec. nearly twice as many ♂♂ were killed. [The findings of this study parallels those found in other states.]

Shotts, Emmett B., Wm. E. Greer, and Frank A. Hayes. (Sch. Vet. Med., U. Ga., Athens.) A PRELIMINARY SURVEY OF THE INCIDENCE OF BRUCELLOSIS AND LEPTOSPIROSIS AMONG WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS) OF THE SOUTHEAST. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 206-208. 1958 (1959).

This paper also appeared as J. Am. Vet. Med. Assn. 133(7): 359-361, Oct. 1, 1958 and was reviewed in WR 93: 57.

Stenlund, Milt. (Minn. Dept. Cons., St. Paul.) OUR WHITE-TAILED DEER PROBLEM. Animal Kingdom 62(4): 106-110, illus. July-August 1959.

An article which emphasizes the national importance of the deer problem. The management problem is especially acute in New England and the Lake States because of the large concentrations of white-tails in those sections. The familiar story is told using examples from the Kaibab, Pennsylvania, Wisconsin, New York, Michigan and Minnesota.

Youatt, W. G., L. D. Fay, G. L. Whitehead, and J. P. Newman. (Mich. Dept. Cons., Lansing.) BRUCELLOSIS AND LEPTOSPIROSIS IN WHITE-TAILED DEER IN MICHIGAN. J. Wildl. Mgt. 23(3): 345-348, 4 figs. July 1959.

Michigan deer are apparently free of brucellosis. All of the Brucella abortus plate-agglutination tests on 866 deer-serum samples at the 1:25 dilution were negative. Leptospira pomona agglutination-lysis tests were made on 190 samples: titers were found in 50; 140 were negative. In addition, 40 of these samples tested with L. canicola and L. icterohaemorrhagiae antigens were negative. There was no correlation as to location, sex, or age of the deer that showed L. pomona titers.--Authors' summ.

Alaska. 1951 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 84 p., illus. [1952.]
This, the 3d annual report of the series is the first which has not dealt solely with fisheries. A predator control program was initiated in 1951 designed to aid in the reduction of hair seal in areas where they caused heavy damage to commercial fisheries. On the Stikine River, 946 were shot by two hunters hired by the Dept. during the period May through Sept. An estimated 500 were killed by dynamite charges during Oct. on the Copper River area. Herds were located by aerial survey prior to effecting control measures.

Alaska. 1952 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 87 p., illus. [1953.]
The predator control program was expanded. There was an 18% reduction of take in the hair seal, on the Stikine River district despite the fact that an additional month was used in this activity. In the Copper River district where the "depth charges" were used, a kill of 6,289 hair seals was made; an additional kill of 123 hair seals was made in the Taku River district.

Alaska. 1953 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 93 p., illus. [1954.]
A decline in the seal population in the Stikine River district was attributed to the predator control program which was reduced accordingly with 552 hair seals and 11 sea lions were taken. Perfection of the depth bomb techniques resulted in a take of 6,799 hair seals in the Copper River area. In the Taku River district 355 hair seals were shot.

Alaska. 1954 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 92 p., illus. [1955.]
"After three seasons of control, seals are yet abundant enough to discourage a relaxation on them, though there are indications that progress is being made." A study of the ecology of the beluga [Delphinapterus leucas] was initiated in the Bristol Bay region. A total of 68 belugas was collected to obtain information on food habits, breeding biology and life history. Red salmon is a major item in the diet of the beluga, and the estimated value of the loss in 2 concentration areas of the Bay was estimated at $148,000 to $297,000 annually. Along the west coast of Alaska, Eskimos utilize at least 200,000 lbs. of beluga flesh annually.

Alaska. 1955 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 152 p., illus. [1956.]
Substantial decreases in the seal populations in the Stikine River, Copper River and Taku River districts where intensive predator control programs have been carried on in past years, but still their depredations are occasionally so excessive that a continuation of control is necessary. The beluga investigation continued and an 8-page report covering the description, range and movements, numbers, materials collected, evaluation of fingerling losses and of adult salmon losses, and conclusions derived is included, and summarized in tables. The magnitude of the predation problem is indicated from studies made of the belugas near the mouth of the Kvichak River where the beluga population (150) took almost 3 million young salmon annually during the downstream migration.

Alaska. 1956 ANNUAL REPORT. Alaska Fisheries Board & Alaska Dept. Fisheries. 118 p., illus. [1957.]
The multi-phase marine predator control and investigation continued with investigations on: seal control and biology; sea lion movement, populations, breeding habits, and its relation to commercial fisheries; the biology of the beluga and its control; bird predations on salmon; and the effects of predation or competition by resident fish on sockeye salmon production. [More than 90% of the material in these annual reports is concerned solely with fisheries.]

Alaska. 1957 ANNUAL REPORT. Alaska Fish & Game Comm. & Alaska Dept. Fish & Game. 124 p., illus. [1958.]

Included in this report is a 10-page section by James W. Brooks entitled: Predator investigation and control. It was found that the destruction of seals by department and bounty hunters had little residual benefit, but seal depredations in se. Alaska are rather easily kept under control by localized programs. In the case of the Copper River gill net fishery, large scale destruction of seals proved necessary. Food habit studies indicate that the harbor seal feeds on the salmon and its predators. As a result of the sea lion investigations, all of the important rookeries have been located and it has been found that sea lions are near their possible peak abundance, unless new rookery sites are pioneered in the future. The total sea lion population in Alaska is in excess of 100,000 animals. Tagging of more than 100 sea lion pups has been effected for future studies. Included are studies on sea lion food habits and depredation. Harassment of the belugas [Delphinapterus leucas] by fast outboard-driven skiffs proved very effective in combatting predation upon salmon during migration when applied during daylight hours and in good weather. Taping of some beluga sounds was done by Dr. Archie S. Mossman, and he plans to obtain additional recordings for use in the testing of the responses of these whales to them. Limited studies of bird predation on salmon indicated that no serious predation occurred because of the very small seaward salmon migration in 1957. Methods of frightening terns and gulls were tested, but with relatively small success.

Dawbin, W. H. (U. Sydney, Sydney, New South Wales.) EVIDENCE ON GROWTH-RATES OBTAINED FROM TWO MARKED HUMPBACK WHALES. Nature 183(4677): 1749-1750, 2 figs. June 20, 1959.

Recent estimates of the age at which whales reach sexual maturity have depended primarily on interpretations placed on the rate of accretion in baleen and ear plugs. However, up to now, the techniques have not been standardized against known-aged whales. Baleen tracings from ♂ humpback of known age show 3 zones of accretions regarded as annual increments. Hypothesis of two ear-plug laminations formed per year also verified in this individual. This 3-year-old ♂ was considered immature based on body length measurements, testes weight, and the fact that the seminiferous tubules were still closed. Body length and ovary weight of the ♀ humpback also indicated that the individual was sexually immature at the minimum age of 3 years. The age of sexual maturation indicated by these 2 marked humpbacks is substantially greater than the estimate of 2 years which has long been accepted, but falls within the estimate of 3-4.5 years for ♀♀ calculated after analysis of recent material using indirect methods.

Hewer, H. R., and K. M. Backhouse. (Dept. Zool., Imperial Coll., London, Eng.) FIELD IDENTIFICATION OF BULLS AND COWS OF THE GREY SEAL, HALICHOERUS GRYPUS FAB. Proc. Zool. Soc. London 132(4): 641-645 + 18 figs. on 5 pls. Aug. 1959.

In the gray seal, there are 2 tones contributing to the color pattern--a darker and a lighter. In ♂♂ the darker tone is the more extensive, being a continuous background with lighter patches. The reverse is characteristic of ♀♀. These differences are well demonstrated with drawings and photographs.

Kenyon, Karl W., and Dale W. Rice. (Sand Point Naval Air Station, Seattle 15, Wash.) LIFE HISTORY OF THE HAWAIIAN MONK SEAL. Pacific Sci. 13(3): 215-252, 18 figs. July 1959.

History, distribution, abundance, population factors (sex and age ratios), movements, food habits, behavior, birth and development of young, physical characters and growth, and associations with other organisms are discussed in this valuable addition to the literature of this little known marine mammal.

Myers, Betty J. (Inst. Parasit., Macdonald Coll. P.O., Quebec.) THE STOMACH CONTENTS OF HARP SEALS (PHOCA GRŒNLANDICA ERXLEBEN) FROM THE MAGDALEN ISLANDS, QUEBEC. Can. J. Zool. 37(3): 378. June 1959.

MAMMALS--MARINE--Continued

Venables, U. M., and L. S. V. Venables. (Ty'n Lon, Bodorgan, Anglesey, N. Wales.) VERNAL COITION OF THE SEAL PHOCA VITULINA IN SHETLAND. Proc. Zool. Soc. London 132(4): 665-669. Aug. 1959.

The normal mating season is Sept.-Oct. in Shetland. May-June coition is rare. Observations in spring of 1958 yielded a maximum colony count of 274 of which 6.4% were yearlings. Similar observations in 1954 yielded 15% yearlings. This is attributed to the doubling of the annual kill of pups following an increase in price (66%) of pup's pelts in 1955.

MAMMALS--OTHER GROUPS

Mohr, Carl O., and Harvey B. Morlan. (Ill. Nat. Hist. Surv., Urbana.) THE NATURE OF PARASITISM OF THE OPOSSUM BY FLEAS IN SOUTHWESTERN GEORGIA. J. Parasitol. 45(2): 233-237. 1959. [From Biol. Abst. 33(10).]

A study was made in sw. Ga. of the nature of parasitism by fleas on the opossum, Didelphis marsupialis, in unoccupied farm buildings, on occupied farm premises, in fields and woods and in premises that had been treated with DDT for control of rat fleas. Infestation on opossums from buildings unoccupied by humans was similar to that from opossums from fields and woods. Populations of fleas on the opossums were compared with populations on key or sustaining hosts of each flea species. Pulex irritans or simulans were present on only 1 of the 349 opossums examined while 5 of 212 skunks, Mephitis mephitis and Spilogale putorius bore them. Leptopsylla segnis was found on only 3 of 216 opossums trapped in buildings occupied by man, stock and pets, whereas it was reported to occur on 13% of the house mice, 19% of the loft rats, Rattus rattus, and 21% of the Norway rats, R. norvegicus, taken on the same premises. Xenopsylla cheopis was found on 7% of the opossums while occurring on 21% of the loft rats and 39% of the Norway rats. Echidnophaga gallinacea infested up to 18% of the opossums from occupied premises and apparently most of the domestic fowl on these premises. Ctenocephalides felis infested 38% of the opossums from occupied buildings and 21% of those from fields, woods and unoccupied premises, whereas they infested 100% of the domestic cats. Polygenis gwyni infested up to 29% of the opossums from occupied premises and 35% of those from fields, woods and unoccupied premises, whereas they infested 52% of the cotton rats, Sigmodon hispidus. Data are given also for Orchopeas howardi, Odontopsyllus multispinosu and Cediopsylla simplex. The mean number of each flea species per opossum and normal host also is reported.--From abst. by C. O. Mohr.

BIRDS--GENERAL

Kuyava, Gary C. (Duluth, Minn.) HOW TO MIST NET BIRDS. Flicker 31(3): 69-72. Sept. 1959.

A readable account summarizing the "hows" and "whys" of bird mist netting.

Woodford, J. (Royal Ont. Mus., Toronto, Can.) THE USE OF MIST-NETS AND A HELIGOLAND TRAP AT POINT PELEE. Bird-Banding 30(1): 38-46, 2 figs. Jan. 1959.

Summary: "1. A full-scale Heligoland model trap was built at Point Pelee... [in] 1954. Both the trap and mist-nets have been used since 1955. 2. Data are available on 1,647 birds netted and 701 taken in the trap. 3. These are listed by sp. and families. 4. Relative merits of mist-nets and Heligoland traps are summarized. 5. Possibilities of building Heligoland traps in N. A. are discussed."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Allee, W. C., D. Foreman, E. M. Banks, and C. H. Holabird. EFFECTS OF ANDROGEN ON DOMINANCE AND SUBORDINANCE IN SIX COMMON BREEDS OF GALLUS GALLUS. Physiol. Zool. 28: 89-115. 1955.

Injection of testosterone propionate raises a subordinate bird's position in the social hierarchy of a flock of its own breed and increases its chance of winning in pair contests with a bird of another breed. The amount of these effects varies between different breeds but if breeds are compared, the improvement in social position is not exactly correlated with the increased success in fights, showing that a complex of factors is involved.--[From review by J.M.C., Ibis 100(1), 1958.]

Assenmacher, I. LA MUE DES OISEAUX ET SON DETERMINISME ENDOCRINIEN. Alauda 26: 251-289. 1958. [From notice by Eugene Eisenmann, Auk 76(3).]

In French. "A lucid and useful review and synthesis of published data on the endocrine basis of molt in birds, with an extensive bibliography. The thyroid gland is believed to be most important in producing molt. While sex hormones, in some species, affect the form and color of the new feathers or may give molt its cyclical character, in many species molt occurs without regard to the stage of the gonadal cycle."

Baird, James, Aaron M. Bagg, Ian C. T. Nisbet, and Chandler S. Robbins. (Norman Bird Sanctuary, Middletown, R. I.) OPERATION RECOVERY -- REPORT OF MIST-NETTING ALONG THE ATLANTIC COAST IN 1958. Bird-Banding 30(3): 143-171, 6 figs. July 1959.

Most of the information included is directly related to the weather and migration analysis: a summary of the 1958 coastal bandings, station summaries, and recoveries. Fewer stations (18) were operated but more birds (20,221) were banded than in 1957. All the large waves of migrants followed in the wake of cold fronts passing through the coastal areas. Largest numbers usually coincided with a sharp temperature drop in the Northeast and a strong flow of Polar air from the Northwest.

Baird, James, Chandler S. Robbins, Aaron M. Bagg, and John V. Dennis. (Norman Bird Sanctuary, Middletown, R. I.) "OPERATION RECOVERY" -- THE ATLANTIC COASTAL NETTING PROJECT. Bird-Banding 29(3): 137-168, 5 figs. July 1958.

Includes a summary of the first 3 years of coordinated bird netting along the Atlantic coast. [Emphasis is on the 1957 operation and the following account refers to the work of that year.] During Aug. and Sept. 1957, 22 bird netting stations were operated on or near the Atlantic coast from Nova Scotia to N. C. Total bandings amounted to 11,613 individuals of 130 spp., of which passerine birds made up to 97% of the total individuals. Correlations were made between weather conditions and their effect on migration at various coastal netting stations. The movement of a high pressure cell from the Great Lakes towards the Maritime Provinces results in a sustained northerly (southward) flow of Polar air for 2 or more days after passage of a cold front; this produces several days of migratory activity, the second frequently being the best. If, however, the High drifts southeastward, stations to the north of its center soon experience a shift to warm, southwesterly winds and a rapid diminution of migration.--From authors' summ.

Bellrose, Frank C. (Ill. Nat. Hist. Surv., Havana.) CELESTIAL ORIENTATION BY WILD MALLARDS. Bird-Banding 29(2): 75-90, 7 figs. April 1958.

Data were obtained on 240 flights of mallards released on 20 occasions under 4 basic sky conditions during Nov. 1956-March 1957. Initial flight headings of recently-trapped mallards were to the north and northwest when the birds were released under clear skies, day or night. Headings of recently-trapped mallards under overcast skies (day or night) were more or less at random. Time of day, low to moderate wind velocities, wind direction, and season were factors which did not affect the northward orientation of mallards under clear skies. Presence or absence of a visible moon had no effect upon the directional orientation of ducks at night. Obscuring the sun, even temporarily by clouds, resulted in the disorientation of many released mallards. Mallards which had been held in captivity a month or more tended to lose their ability to orient northward even on clear days. Under overcast conditions, mallards invariably flew a circuitous flight course, approaching either a zigzag or spiral search pattern. There is no known reason for the northward orientation of the mallard, but it is speculated that it may relate to the area in which the duck was reared.--From auth. summ.

Chisholm, A. H. (Sydney, New South Wales.) THE HISTORY OF ANTING. Emu 59 (2): 101-130, 3 figs. + 2 photos on 1 pl. May 1959.

"...a summary of the inquiry as a whole (chiefly for the information of Australians who will not have seen certain journals of other countries), together with a detailed and chronological list of all substantial Australian records (chiefly for the information of workers abroad)." "...in my view the general purpose of anting...is the stimulating and soothing of the body, and I suggest that the general effect is similar to that gained by humanity from the use of external stimulants, soothing ointments, counter-irritants (including formic acid), and perhaps also smoking."--L. F. Stickel.

Fabricius, Eric. WHAT MAKES THE PLUMAGES OF BIRDS WATER-REPELLENT? Zoologisk Revy 18: 71-83. 1956. [Bird-Banding 30(3), July 1959.]

In Swedish with English summ. Upsetting the author's (Ornis Fenn., 22: 33-45) earlier assumption that diet influenced the water-repellent properties of the plumages in young waterfowl, experiments with downy young Tufted Ducks (Aythya fuligula) showed that what they ate did not matter, provided their feathers were not soiled or disarranged by the feeding and/or the food. Thence Dr. Fabricius goes on to establish the following facts: 1) the uropygial gland is functional from the moment of hatching in young Tufted Ducks but the existence of the secretion can, without injury to the birds, only be shown at death, when the powerful sphincter muscles which control it are completely relaxed; 2) the downy feathers of newly hatched ducklings are water-repellent in themselves, without any oiling having to be effected either by the mother or some "innate agency"; 3) preening, the movements of which he analyses in minutest detail, is the chief agent preserving the waterproof quality of the plumage, less through the anointment with oil gland secretion, than by maintaining the fine structural organization of the barbules of the feathers. The most important preening movement is the chewing of each feather from base to tip. In an unsoiled and well-groomed plumage the constant distances between the barbules are thereby kept so small that water with normal surface tension cannot penetrate the webs. As soon as these distances are disturbed, however, for instance by handling the bird, the water is sucked in through the resulting apertures, replacing the air contained in the plumage, with as dire a consequence as if the bird had been ducked in oil. Oil, as known, has a much lower surface tension than water. Unfortunately, a weather catastrophe interrupted Dr. Fabricius' experiments, causing the death of all his test birds. Hence, despite this notable effort to clear up a baffling problem, he was unable seriously to challenge Dr. Elder's (Wils. Bull. 66: 6-31) well-argued contention that ducks in the wild, deprived of their uropygial glands, eventually succumb.--Louise de K. Lawrence.

Helms, Carl W. (Hatheway School of Cons. Educ., Drumlin Farm, South Lincoln, Mass.) SONG AND TREE SPARROW WEIGHT AND FAT BEFORE AND AFTER A NIGHT OF MIGRATION. Wilson Bul. 71(3): 244-253, 1 fig. Sept. 1959.

From summary: Song sparrow and tree sparrow samples taken before and after a night of coastal migration show that pre-flight individuals have significantly higher body weight and fat than post-flight individuals. Comparisons of these samples with monthly or half-monthly means obtained from "mixed" populations suggest that pre-flight individuals show a true migratory preparation which is not reflected in the mean values over longer periods in these 2 spp. Two patterns of weight and fat variations in emberizines are proposed with criteria for each: tree sparrows are examples of Type I, while slate-colored juncos are examples of Type II. Determination of sex using the cloacal protuberence is possible at all seasons in Type I variants, but only during the breeding season in Type II variants.

Keil, Werner. WHICH BIRDS NEST IN ARTIFICIAL NEST POCKETS? Waldhygiene 1(7): 229-230. 1956. [From account in Bird-Banding 29(3), July 1958, by C. H. Blake.]

In German. Artificial nest sites, "pockets" of long twigs, were provided and were used by 9 spp. of birds: 35.5%, wrens; 15.5%, robins; 12.9%, blackbirds. Use by other species did not exceed 8.1%. The provision of such sites for open nesters could well be investigated in this country.

Kessler, Francis William. A STUDY OF THE EFFECTS OF WEATHER ON BREEDING BEHAVIOR, NEST ESTABLISHMENT, EGG LAYING, AND HATCHABILITY OF THE RING-NECKED PHEASANT. Ph.D. thesis, Ohio State U. 125 p. 1959. [From Dissertation Abstracts 20(2).]

A study of the effects of weather on the ring-necked pheasant was conducted during 1955-56 at the Delaware Farm Game Exp. Sta. (Ohio). Approximately 100 ♀♀ and 10 ♂♂ were used during each year of study. Weather instruments were installed to measure the various elements of weather with which the study was concerned. The relationship between the stage of incubation and the av. daily egg temperature was investigated; the data showed that av. daily egg temperatures were fairly constant throughout the incubation period. Amount of rainfall had no noticeable effect on egg temperature during incubation.

Duration of rainfall had no noticeable effect on egg temperature during incubation. Nest attentiveness during incubation was influenced by the frequency of precipitation; the more frequent the periods of precipitation, the more frequent the departure of the hen from her nest. Data collected indicated that the incubating hen spent a greater amount of time off the nest during the early and late stages of incubation than during the intermediate period. Winds of 15-18 mph caused pheasants to congregate in dense cover, where strife resulted. As a result, some of the territorial cocks became submissive and remained so throughout the season.

King, James R., and Donald S. Farner. (Dept. Exp. Biol., U. Utah, Salt Lake City.) PREMIGRATORY CHANGES IN BODY WEIGHT AND FAT IN WILD AND CAPTIVE MALE WHITE-CROWNED SPARROWS. Condor 61(5): 315-324. Sept. 1959.

White-crowned sparrow ♂♂ exhibit an abrupt and extensive deposition of body fat in the spring. On the average, it results in an approximate doubling of the quantity of reserve fat, and this adjustment in level occurs during a span of about 10 days immediately preceding northward migratory movement. The major effect of captivity consists of an exaggeration of the magnitude of the reserves accumulated during the period of active vernal fattening. In view of the abundant food supply available to captives and the curtailment of their muscular activity this is a predictable difference. Especially interesting characteristics of vernal fat deposition include its typically abrupt inception, precipitant rate of development, and the rather high degree of precision in the timing of this annual recurrence.--From summ.

Klima, M. THE DEVELOPMENT OF THE BURSA FABRICII. Acta Soc. Zool. Bohemosloven 21(4): 332-354. 1957. [From account by F.J.T. in Ibis 100(4), Oct. 1958.]

In Czech with German summary. Based on 409 specimens from 35 genera [sic]. The approximate time of reduction of the bursa is given and histological changes are described. Rough estimates of age can be made from the state of the bursa.

Klima, Milan. ON THE MORPHOLOGY OF THE BURSA FABRICII OF BIRDS. Sylvia 15: 151-170. 1958. [Bird-Banding 29(4), Oct. 1958.]

In Czech with German summary. Researches on 409 individuals of 35 spp., abundantly illustrated with sketches and photographs.--M. M. Nice.

Klopfer, Peter H. (Duke U., Durham, N. C.) THE DEVELOPMENT OF SOUND-SIGNAL PREFERENCES IN DUCKS. Wilson Bul. 71(3): 262-266. Sept. 1959.

Thirty-five incubator-hatched common sheldrake (Tadorna tadorna) ducklings were tested for determination of type and degree of auditory imprinting. Their responses in some tests resemble that of wood ducks--in other tests their behavior was similar to that of several species of surface-nesting waterfowl.

Koskimies, J. ZUR CHARAKTERISTIK UND GESCHICHTE DER NISTÖKOLISCHEN DIVERGENZ BEIM MAUERSEGLER, APUS APUS (L.) IN NORDEUROPA. Orn. Fenn. 33: 77-93. 1956. [Ibis 100(3), July 1958.]

In German. The swift nests in holes in trees in N. Europe and in buildings in S. Europe. A population of southern swifts nesting in buildings has spread into the s. of Finland, and is sharply demarcated from the original tree nesters.

Lack, David. (Edward Grey Inst., Oxford, England.) THE RETURN AND DEPARTURE OF SWIFTS APUS APUS AT OXFORD. Ibis 100(4): 477-502. Oct. 1958.

The return in spring and departure in autumn of resident swifts was studied for six years, primarily by means of a nightly check of roosting birds. The mean date of return in spring has varied by 9 days in different years. The return was delayed with a cold northerly airstream, but not otherwise. The mean date at which adults departed in autumn depends primarily on the date when breeding started, and hence on the weather in May.--From auth. summ.

MacArthur, Robert H. (U. Pa., Philadelphia.) ON THE BREEDING DISTRIBUTION PATTERN OF NORTH AMERICAN MIGRANT BIRDS. Auk 76(3): 318-325, 1 map. July 1959.
1. Over a variety of undisturbed habitats throughout the continent, the density of breeding individuals of species migrating to the Neotropics seems to correlate with the contrast between winter and summer food supply in the given habitat. 2. In the undisturbed northern habitats considered, the average migrant to the Neotropics is commoner than the average species which fails to make this journey. The reverse is true in southern habitats.--Auth. summ.

Marler, P. BEHAVIOR OF THE CHAFFINCH, FRINGILLA COELEBS. Behaviour, Suppl. V: 1-184. 1956. [Bird-Banding 29(2), April 1958.]
There are excellent summaries in English and German...a 5-page bibliography, an index, and 10 plates each with 6 photographs of displays of captive birds. ...This monograph is a notable example of the ethological approach in life history studies. In simple, straightforward English the author tells not only what the chaffinch does throughout the year, but how it does it, how it expresses its moods and intentions, and thus how it communicates with its fellows. Dr. Marler's book is a necessity for anyone seriously studying the behavior of birds.--M. M. Nice.

Nagra, Clarence L., and Irven O. Buss. (U. Wis., Madison.) CHANGE IN BODY WEIGHT ASSOCIATED WITH ONSET OF OVARIAN RECRUDESCENCE AND OVIPOSITION IN PHEASANTS. Condor 61(5): 348-350, 1 fig. Sept. 1959.
The seasonal change in body weight parallels the pattern of growth manifested by the ovary. Graphical and statistical analysis results are presented and the findings are correlated with those of other investigators concisely.

Nickell, Walter P. (Cranbrook Inst., Bloomfield Hills, Mich.) VARIATIONS IN ENGINEERING FEATURES OF THE NESTS OF SEVERAL SPECIES OF BIRDS IN RELATION TO NEST SITES AND NESTING MATERIALS. Butler U. Bot. Studies 8(2): 121-140, 1 pl. Dec. 1958.
Conclusions drawn by Nickell are based on 35 years of examining in the field and collecting of about 20,000 nests of 169 spp. of birds. Only about 7% of the spp. listed in e. N. A. exhibit any great degree of variation from their usual nest placements. Six major types of nest suspension are described and illustrated for 16 spp. of birds. The branching habits of trees, shrubs and forbs are discussed in relation to nest site choice. Forbs are shown to be largely unsuitable for nest sites for most species of birds since they are not available at the height of the nesting season and are poorly branched and weak. Goldenrods, thistles, cattails, reeds and marsh grasses are exceptions for the red-winged blackbird and goldfinch. Nesting materials are discussed, their types and the specificity of their use by the bird species are indicated.--From auth. summ.

Nisbet, I. C. T. (Mass. Inst. Tech., Cambridge 39, Mass.) CALCULATION OF FLIGHT DIRECTIONS OF BIRDS OBSERVED CROSSING THE FACE OF THE MOON. Wilson Bul. 71(3): 237-243, 1 fig. Sept. 1959.
Summary: Instructions and tables are given from which observers without mathematical training can calculate flight directions and approximate densities of migrating birds observed flying across the face of the moon. Estimates are given of the accuracy of the results. The mathematical theory of the calculations is outlined in an appendix. It is pointed out that the results obtained for the flight density depend critically on the distribution of migrating birds with height, which is not yet known.

Odum, Eugene P. (U. Ga., Athens.) THE FAT DEPOSITION PICTURE IN THE WHITE-THROATED SPARROW IN COMPARISON WITH THAT IN LONG-RANGE MIGRANTS. Bird-Banding 29(2): 105-108, 1 fig. Apr. 1958.
"The purpose of this...report is to summarize all of the data which we have obtained on fat deposition in the white-throated sparrow." Investigations began in 1947. Evidence supports a theory advanced in 1951 that immature or 1st year ♀♀ probably tend to winter further south than adults in general and ♂♂ in particular.

Perdeck, A. C. TWO TYPES OF ORIENTATION IN MIGRATING STARLINGS, STURNUS VULGARIS L., AND CHAFFINCHES, FRINGILLA COELEBS L., AS REVEALED BY DISPLACEMENT EXPERIMENTS. Ardea 46: 1-37. 1958. [From account by D.F.O. in Ibis 100(4), Oct. 1958.]

From 1948-57 more than 11,000 starlings caught during autumn near The Hague were taken to Switzerland. Banding studies show that these birds come from Scandinavia, the Baltic, Poland, Germany, Denmark and Holland, and that they normally winter in Holland, Belgium, France, England and Ireland. After displacement, the adults aimed nw. to the original wintering area, and the juveniles aimed sw. to France and the Iberian Peninsula. Recoveries in late years showed that adults returned to the original wintering area, but that juveniles tended to return to the wintering area reached after their displacement. Studies conducted with chaffinches on a lesser scale indicated similar differences between the two age groups.

Ringleben, Herbert. BIRDS NESTING IN OR ON STRUCTURES. Vår Fågelvärld 17: 109-118. 1958. [Bird-Banding 30(1), Jan. 1959.]

In German with Swedish summ. With most of the records coming from Germany, more than 30 species have been found nesting in or on buildings. Among these are jays, nuthatches, creepers, titmice, thrushes, swallows, ducks, doves, and gulls. The author points out the possibility of following the evolutionary process of this change in ecological requirement. Not all of these species are cliff-dwellers originally. In the cliff-dwelling species no ecological evolution has actually taken place. No "pressing circumstances" appear to have existed for eliciting such behavioral alterations.--Louise de K. Lawrence.

Saez-Royuela, Ramon. BIRD-BANDING IN SPAIN: 2ND REPORT (1958). Ardeola (Madrid) 5: 99-106. 1959.

In Spanish with English summary. In 1958, banding of birds by the Spanish Ornithological Society (S.E.O.) netted 1,516 birds of 38 species. Among them were 1,108 storks. During the period 29 captures (mostly storks) were made. One white stork (Ciconia ciconia) was found 350 km. (219 miles) from site of release approximately 2 months from release date. A hoopoe (Upupa epops) was recaptured six months after release more than 500 miles (825 km.) from release site.

Sauer, F. DIE STERNENORIENTIERUNG NÄCHTLICH ZIEHENDER GRASMÜCKEN (SYLVIA ATRICAPILLA, BORIN AND CURRUCA). Z. Tierpsychol. 14: 29-70. 1957.

[In German.] At the time of the autumn migration birds were put singly into a circular cage which could be rotated and was screened on all sides, so that no surrounding landscape could be seen. In clear starlit nights during the migration period the fluttering birds kept facing in their natural migration direction (e.g. Blackcaps and Garden Warblers towards S.S.W.-S.W.) even if they had never seen the sky before the experiments. Moonlight and shooting stars disturbed the response. As long as the brightest stars were still visible through a veil of clouds the direction of migration was unimpaired. In a diffusely illuminated room or under a cloudy sky the birds were completely disoriented. To direct light coming from the side they showed positive phototaxis. In similar experiments during spring migration, two Blackcaps chose the species-specific direction of migration (N.N.E.-N.E.). In a Zeiss planetarium, under diffuse illumination the direction of "migration" scattered irregularly in every direction. Under an artificial replica of a starlit spring sky a Blackcap faced N.N.E.-N.E. in spring. In autumn a Lesser Whitethroat faced towards S.S.E.-S.E. under an artificial autumn sky. An inexperienced Lesser Whitethroat, presented with the starry skies of different latitudes faced between S.E. and S., in a way which exactly corresponds to the known behaviour of experienced birds in nature. Presentation of an autumn sky during spring and vice versa caused the birds to alternate rapidly between the direction of spring and autumn migration. Under a winter or a summer sky during autumn a Lesser Whitethroat was completely disoriented. If the constellations were changed to correspond with an eastward or westward displacement of the birds, they were able to compensate for this and would have found their way back into their summer or winter quarters; the author suggests that they were able to see a part of the star pattern known to them. Testovirone injection induced migratory behaviour out of season in a Blackcap.--[Entire notice by U. W. in Ibis 100 (3), July 1958.]

Staude, Johannes. ARTIFICIAL NEST SITES FOR BUSH-NESTING BIRDS. Waldhygiene 1(7): 229-230. 1956. [From account by C. H. Blake in Bird-Banding 29(3), July 1958.]

In German. Notes some spp. additional to Keil's list [see WR 97: 47] and refers to providing bark for tree creepers and to brush heaps.

Stenger, Judith, and J. Bruce Falls. (U. of B. C., Vancouver.) THE UTILIZED TERRITORY OF THE OVENBIRD. Wilson Bul. 71(2): 125-140, 6 figs. June 1959.

Results of a study of ovenbird territories in 4 forest types in Algonquin Park, Ont. Total utilized territories varied from 0.8 to 4.3 acres, being small in an aspen stand, intermediate in size in conifer-birch and mixed stands, and large in a maple stand. Thus, territory size increased with increasing height and density of for. canopy, with decreasing vegetation near the ground. During the breeding season, the area utilized was large during premating and mating periods, smaller during nest-building and egg-laying, and large again during incubation and nestling period.--From auth. summ.

Summers-Smith, D. NEST-SITE SELECTION, PAIR FORMATION AND TERRITORY IN THE HOUSE-SPARROW PASSER DOMESTICUS. Ibis 100(2): 190-203, 2 figs. April 1958.

Bigamy appears to be uncommon. The house sparrow is a colonial nester and territorial behavior is limited to defence of the nest-site. The factors of importance in these aspects of the life of the house sparrow are: sexual dimorphism, sedentary behavior and the use of fixed sites for nesting. Colonial nesting is considered to have arisen from the bird's feeding habits and sedentary behavior; it is maintained by the method of pair formation.--From summ.

Turček, F. J. (For. Res. Inst., Banská Štiavnica, Czechoslovakia.) ON BIRD BANDING IN THE USSR. Bird-Banding 29(2): 111-112. April 1958.

In the USSR birds have been systematically banded since 1925. Through 1953, over half a million birds were banded. Numbers of birds banded by orders are listed, and percent of banded bird returns of some groups are discussed. On an average, 1.6% of banded birds are "returns," and a total of 1,219 birds banded in other countries has been found in the USSR. Returns of passerine birds and game birds are about 0.5% while returns in geese are 3.9%. Intensive trapping of pied flycatchers have yielded from 30-55% returns for some studies. About 30 spp. of birds have been banded in the USSR.

VOGELTREKSTATION TEXEL. [Annual report for 1956.] Limosa 30: 59-83. 1957.

Dutch with English summ. Includes a preliminary summary of the results of A. C. Perdeck's large-scale experiments transporting young and adult Starlings off their autumn migration route. Young continue to travel in the same direction as if they had not been displaced; adults aim for the area where they have previously wintered. An experiment is also mentioned, similar to Kramer's, on the orientation of Starlings in small "pavilions" with and without sight of the sun. J. H. Mook, J. Rooth and J. J. Zijlstra analyse a great quantity of evidence on the course of migrating Starlings and Chaffinches and establish quantitatively such phenomena as the change in standard direction during the course of the morning.--[From review by J.M.C., Ibis 100(1), 1958.]

Wagner, H. O. ÜBER JAHRES- UND TAGESRHYTHMUS BEI ZUGVÖGELN. Z. Tierpsychol. 13: 82-92. 1956.

[In German.] Migratory birds show two independent diurnal rhythms. These are (1) an always present, exogenous periodicity between activity and rest durin day and night, and (2) a superimposed, endogenous 24-hour periodicity of the migratory activity during the season of migration. In birds which are kept in continuous darkness the first rhythm persists for 2 to 3 days only. After this it is possible to induce new (e.g., shorter) rhythms by subjecting the birds to periodic illumination, feeding, or noises. In continuous darkness the rhythm of migratory activities may persist for 12 days; it takes equally long to shift this rhythm by a few hours. Shorter rhythms could be established only with difficulty and they did not persist long in continuous darkness.--[Entire notice by U. W. in Ibis 100(3), July 1958.]

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Calef, Robert T. (U. Ill., Urbana.) AVIAN POPULATIONS OF THE FUNK FOREST NATURAL AREA IN McLEAN COUNTY, ILLINOIS. Ill. Acad. Sci. Trans. 46: 240-257, 10 figs. 1953.
Birds include 94 spp. Population evenly divided between breeding population, migratory transients, and the group including occasional visitors and winter visitors. Eight major plant strata were identified and their utilization by 24 spp. of birds were recorded.--[From M.S. thesis.]

Ellis, Derek V. (Biol. Station, Nanaimo, B. C.) OBSERVATIONS ON MIGRATION, DISTRIBUTION AND BREEDING OF BIRDS IN THE CANADIAN ARCTIC DURING 1954 AND 1955. Dansk. Orn. Foren. Tidsskr. 3: 207-230. 1956. [From account by M.M.T. in Ibis 100(4), Oct. 1958.]
An annotated list which covers the distribution of 63 spp. of birds, with information of the 1st and last dates on which they were seen, the occurrence of breeding and the relationship between the formation of ice and the departure of sea birds.

Gullion, Gordon W., Warren M. Pulich, and Fred G. Evenden. (Cloquet, Minn.) NOTES ON THE OCCURRENCE OF BIRDS IN SOUTHERN NEVADA. Condor 61(4): 278-297, 1 fig. July 1959.
Notes on the seasonal occurrence or distribution of birds in the Mohave desert section of Nev. About 180 forms are present.

Hawaii Audubon Society. HAWAIIAN BIRDS. Hawaii Audubon Society, Honolulu 14. 60 p., illus., paper-bound. 1959. Price $1.50. [From Biol. Abst. 34(1).]
This booklet was prepared by the Audubon Society of Hawaii as a guide to birds commonly seen in Hawaii. Extinct and rare birds are not included in this publication and only the most common migrants have been included. For further information on these subjects the reader is referred to the bibliography.--H. H. G.

Houston, C. Stuart, and Maurice G. Street. (Yorkton, Sask.) THE BIRDS OF THE SASKATCHEWAN RIVER / CARLTON TO CUMBERLAND. Sask. Nat. Hist. Soc. (Regina), Spec. Publ. no. 2. 205 p., illus. Aug. 1959. $1.50, paper.
A valuable contribution to the ornithology of central Sask. which demonstrates the role of the amateur in extending our knowledge of bird distribution. The status, history, and distribution of 259 spp., plus 7 hypothetical spp. are reviewed under headings of 4 stations along the Sask. River and of the entire area considered. In addition to the species account, (the bulk of the work), there are sections on historical and biographical notes; bird banding; description of the area and a 6-page bibliography.

Maher, William J. (Mus. Vert. Zool., Berkeley, Calif.) HABITAT DISTRIBUTION OF BIRDS BREEDING ALONG THE UPPER KAOLAK RIVER, NORTHERN ALASKA. Condor 61(5): 351-368, 4 figs. Sept. 1959.
An analysis of the nesting distribution of 34 spp. of birds and their occurrence in 7 major n. Alaskan habitats. Information on breeding biology, density and population trends of these birds is presented.--From auth. summ.

Sams, James R., and Ken Stott, Jr. (San Diego Nat. Hist. Mus.) BIRDS OF SAN DIEGO COUNTY, CALIFORNIA: AN ANNOTATED CHECKLIST. Occ. Pap. San Diego Soc. Nat. Hist. no. 10. 1-49 p. June 1, 1959.

Toschi, Augusto. GLI UCCELLI E LA LORO PROTEZIONE. [BIRDS AND THEIR PROTECTION.] Sezione Italiana Comitato Internazionale Protezione Ucelli (Bologna, Italy). 129 p., 25 figs. 1957. Price 900 Lire, paperback.
In Italian. A popular bird book which emphasizes their protection. Treatment includes: Birds in General (with brief accounts of the major Italian forms), the Economic Value of Birds, Bird Decrease and Extinction, Factors Causing Bird Decrease, Techniques for Bird Protection--Habitat Development (with recommended shrub spp. for planting, winter feeding, nest boxes, predator control) and recent Italian legislation favoring bird protection and conservation.

Urban, Emil K. (1305 Vermont St., Lawrence, Kansas.) BIRDS FROM COAHUILA, MEXICO. U. Kans. Publ., Mus. Nat. Hist. 11(8): 443-516. Aug. 1959.
At least 312 living named kinds of birds of 249 species have been recorded for Coahuila; of these, 154 species are known to breed there.

Valverde, José A. BIRDS OF THE SPANISH SAHARA. (ECOLOGICAL STUDIES OF THE DESERT.) Inst. Estudios Africanos (Madrid). 1-481 p., 51 pls. 1957. [From J. Mamm. 40(3).]

In Spanish. Includes a section (p. 354-406) on mammals.

Van Tyne, Josselyn, and Andrew J. Berger. FUNDAMENTALS OF ORNITHOLOGY. John Wiley & Sons, N. Y. xi + 624 p., 255 figs. 1959. $11.75.

Intended as a text for graduate students, this authoritative volume promises to be an indispensible reference book for professionals and serious amateurs alike. Twelve chapters, each with a carefully selected, up-to-date world-wide reference list, present scholarly treatises on the following subjects: paleontology, anatomy, plumage and molt, senses and behavior, voice and sound production, bird distribution, migration, flight, food and feeding habits, breeding behavior, social relations, and taxonomy and nomenclature. Parts of the 50-page chapter on anatomy are written strictly for the advanced student; most of the book, however, is prepared in such a way that amateurs with no previous zoological training will find it fascinating and highly instructive reading. The final chapter, classification of world birds by families, devotes one page to each family. Physical characteristics, range, habits, food, breeding, technical diagnosis, classification, references, and synonyms are concisely summarized. One member of each family is illustrated by a George Miksch Sutton sketch. A comprehensive glossary is one of the book's many valuable assets. It would be desirable to include in subsequent editions, the sections on conservation, game management, population dynamics and techniques which were originally planned for this volume.--C. S. Robbins.

Wood, Merrill. (Pa. State U., U. Park, Pa.) BIRDS OF CENTRAL PENNSYLVANIA. Agr. Exp. Sta., Pa. State U., Bul. 632. 1-46 p. June 1958.

Annotated account of the 260 species of birds found within 15 miles of University Park. Annotations pertain primarily to seasonal status.

Zimmerman, Dale A., and Josselyn Van Tyne. (c/o N. Mex. Western Coll., 1410 Mississippi, Silver City.) A DISTRIBUTIONAL CHECKLIST OF THE BIRDS OF MICHIGAN. Occ. Pap. Mus. Zool., U. Mich. (Ann Arbor) no. 608. 63 p., 1 map. July 15, 1959.

A revision of Josselyn Van Tyne's checklist of 1938, covering 326 spp. (356 forms) positively known to have occurred in Mich. Of these, 215 are known to have bred at least once in the state. In compiling this revision, museum specimens were examined and the literature on Mich. birds between Jan. 1940 and Aug. 1958 has been reviewed.

BIRDS--POPULATIONS & FLUCTUATIONS

Bruns, H. BEITRÄGE ZUR KENNTNIS DER WISSENSCHAFTLICHEN GRUNDLAGEN UND ZUR METHODIK DES VOGELSCHUTZES IN DER FORSTWIRTSCHAFT. Waldhygiene 2: 4-30. 1957. [From notice by J.M.C., Ibis 100(1), Jan. 1958.]

[In German.] "Describes experiments on the way the density of hole-nesting birds using nest-boxes in forestry plantations is affected by various factors, such as the number and type of nest-boxes, their position in the wood, the size of the wood, the availability."

Bruns, Herbert. STUDIES OF POPULATION DENSITIES OF BIRDS IN CONIFEROUS FORESTS. Ornith. Mitt. 9: 241-253. 1957. [From long review by R. O. Bender in Bird-Banding 29(3), July 1958.]

In German. The results of studies conducted in coniferous woodlands in an effort to increase the density of bird population. This was effected primarily through the use of artificial nest boxes. [See WR 89: 48, WR 90: 57, and WR 94: 61 for reviews of 4 similar papers by Bruns dealing with other forest types.] A discussion of the relative importance of climatic and other factors upon population density is included. Bruns concludes that food supply is not limiting...and that the number of available nesting sites is the most important factor for hole-nesting species. "It is impossible to cover all the important findings reported in this paper in a brief review. The discussions, based on careful study of data on the factors affecting population density, are of particular importance. They cast strong doubt on the dependence of nesting population density on available food supply which has so thoroughly permeated recent biological thought."

BIRDS--POPULATIONS & FLUCTUATIONS--Continued

Dierschke, Fritz. DEPENDENCE OF POPULATION SENSITY OF BIRDS ON THE SIZE, SHAPE AND DENSITY OF SMALLER FORESTS. Waldhygiene 1(2): 38-43. 1955. [From account by C. H. Blake in Bird-Banding 29(3), July 1958.]

In German. Dierschke investigated alder swamps ranging in area from 0.25 to 20 ha. [1 ha. = approx. 2.5 acres] to test the validity of rules enunciated by Peitzmeier (1950): (1) the smaller the forest, the denser the population; (2) the lighter (more open) the forest, the denser the population; (3) the larger the forest, the greater the absolute number of spp.; (4) the smaller the forest, the greater the relative number of spp. Regarding the effect of forest size in rules 1, 3 and 4, the author concludes it is necessary to consider only comparable developmental stages of the same forest community. He also concludes that rule 2 does not always hold because it assumes a direct relation between openness and the amount of undergrowth. Peitzmeier gave no rule for the relation between the amount of edge and the density of population, but Dierschke's studies showed a positive relationship, particularly with the amount of edge within the forest.

Fallet, M. DER JAHRESRHYTHMUS EINES GROSSTÄDTISCHEN BESTANDES DES HAUSSPERLINGS (PASSER DOMESTICUS). Schriften Naturw. Ver. Schleswig-Holstein 29: 39-46. 1958. [From notice by Eugene Eisenmann, Auk 76(3).]

"The annual population rhythm of the House Sparrow at Kiel, Germany. In December the population was 15,000; by the start of the next breeding season only 10,000. In late summer the population had increased by at least 11,250 more, yet brood dispersal, etc. reduced the total to about 17,000 in autumn."

Snow, D. W. THE BREEDING OF THE BLACKBIRD TURDUS MERULA AT OXFORD. Ibis 100(1): 1-30, 5 figs. Jan. 1958.

Breeding statistics and comparisons of garden populations and woodland populations of blackbirds. In comparing woodland vs. garden populations it was found that: (1) breeding begins later in woodland; (2) clutches are smaller in gardens; (3) hatching success is higher in woodlands; (4) brood size at 8 days is higher in woodlands; (5) the garden population produced 4.1 young/pair/year and 66% of them survived. The woodland population has been much less successful on account of heavy predation.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Anon. BIRD CONTROL DEVICES / SOURCES OF SUPPLY. US F&WS, Wildl. Leafl. no. 409. 4 p. July 1959.

Tells where one can order acetylene exploders, exploding shotgun shells, rope firecrackers, revolving lights, shockers, prickly wire excluders, sticky coatings that repel, whirlers, starling distress calls, protective netting, and live traps.

Bliese, John C. (Nebr. State Teachers Coll., Kearney.) FOUR YEARS OF BATTLE AT "BLACKBIRD ROOSTS": A DISCUSSION OF METHODS AND RESULTS AT AMES, IOWA. Iowa Bird Life 29(2): 30-33. June 1959.

Methods employed included: noise-making--audible and supersonic, use of light beams, shooting, firecrackers, use of streams of water from garden hoses, chemical smokers and removal of shade trees. Positive results...were largely local, often rather limited and sometimes quite temporary. Methods used were ordinarily most effective...when applied during the early part of the evening. There was never any evidence that efforts against birds in one year, with the obvious exception of tree removal, had any effect on their behavior the next season.

Hell, P., and B. Sovis. THE RELATIONS BETWEEN THE FEEDING OF CORVIDAE AND AGRICULTURE DURING THE WINTER IN SLOVAKIA. Folia Zoologica 7(1): 38-56. 1958. [From notice by F.J.T. in Ibis 100(4), Oct. 1958.]

Slovakian. Summary in Russian and German. Analyses of 701 stomachs of Corvus frugilegus (468), C. monedula (5), C. cornix (72), Garrulus glandarius (42), and Pica pica (38). About 55% of the birds examined were ♂♂. The main components of the food were grain and corn in crows, and acorns in jays.

Klima, M. EINIGE BEOBACHTUNGEN ÜBER DAS SPECHTRINGELN AN BÄUMEN. Zool. Listy 8(1): 33-36. 1959. [Listed in Bibliog. Agr. 23(9), Sept. 1959.]
In Czech with German summary. Observations upon woodpecker damage to trees.

Mansfield, Karl. ON THE RECOGNITION OF BIRD DAMAGE TO CULTIVATED PLANTS. Ornith. Mitt. 10(1): 3-7. 1958. [From account by R. O. Bender in Bird-Banding 29(3), July 1958.]
In German. Illustrated with photographs. Discusses methods for identifying the birds responsible for damage to fruits and grains. Photographs illustrate the characteristic damage caused by each. Damage by insects and mammals is also shown and discussed.

Nakajima, Shigeru, and Kaoru Shimizu. (Fac. Agr., U. Miyazaki, Japan.) ECOLOGICAL OBSERVATIONS OF WOODPECKERS INJURING TELEPHONE POLES AND SOME MEANS OF PREVENTION. Bul. Fac. Agr. U. Miyazaki 2(1/2): 12-22. 1957. [From Biol. Abst. 33(10).]
In Japanese with English summ. Woodpeckers inflict damage to telephone poles in an attempt to prevent abnormal growth of their bills. Several methods of prevention were studied: metal shields, reflectors, paints, poisons, and combinations of paints and poisons were applied to newly-erected and old poles and results observed. Metal plates were the most effective.--From abst. by MDS.

Pitman, C. R. S. FURTHER NOTES ON AQUATIC PREDATION OF BIRDS. Bul. Brit. Orn. Club 77: 89-97, 105-110, 122-126. 1957. [From notice by R.E.M. in Ibis 100(2), April 1958.]
Contains a wealth of material, from published and unpublished sources, about both marine and fresh-water predators and the prey species.

Rice, Dale. (US F&WS, Seattle 15, Wash.) BIRDS AND AIRCRAFT ON MIDWAY ISLANDS / 1957-58 INVESTIGATIONS. US F&WS, Spec. Sci. Rep.-Wildl. no. 44. ii + 49 p., 5 figs. July 1959.
A continuation of the investigation reported by Kenyon and others in an earlier report (see WR 92: 72). During the 1957-8 season, collisions between albatrosses and propeller-driven aircraft occurred at the rate of 40% of all daylight landings and takeoffs during a Nov. peak and at an average rate of 17%. There have been no crashes or fatal injuries--however, damage to aircraft amounts to 1% of all daylight landings and takeoffs. Experimental killing programs have demonstrated that it would take a number of years (probably 3-5) to reduce the population of albatrosses sufficiently to achieve any practical lowering of the strike frequency. Leveling and clearing the land to eliminate up drafts on which birds are prone to soar is the only method known so far of obtaining any measure of relief immediately. This procedure might reduce albatross strikes by 90%. Elimination of albatrosses from Midway is only to be considered if essential to national defense--since 35% of the world's population of Laysan albatross and 16% of black-footed albatross nest there. The Midway populations of sooty terns, however, are an insignificant part of the world's population. Although sooty terns are frequently struck by aircraft, no damage was reported during 1957-8 seasons. With the advent of jet aircraft, sooty terns would be a distinct hazard--and their elimination might become necessary.

Ruppert, K., and R. Langer. IS BIOLOGICAL PEST CONTROL OF THE OAK LEAF-ROLLER AND ITS INJURIOUS COMPANY POSSIBLE? Forsttech. Inf. no. 5. p. 29-38. 1957.
[In German.] After 4 years of study of the effect of increased avian populations in a mature oak forest near Frankfurt am Main, the authors could detect no effect on the oak leaf-roller population attributable to birds. They conclud that chemical control measures followed by biological control might be more successful and also suggest that increasing avian densities might be more effective in younger forests.--[From R. O. Bender's account in Bird-Banding 30 (2), Apr. 1959 of W. Przygodda's review in Ornith. Mitt. 10: 156-7.]

BIRDS--PARASITES AND DISEASES

Karstad, Lars, J. Spalatin, and R. P. Hanson. (Dept. Vet. Sci. & Bact., U. Wis., Madison.) EXPERIMENTAL INFECTIONS OF WILD BIRDS WITH THE VIRUSES OF EASTERN ENCEPHALITIS, NEWCASTLE DISEASE AND VESICULAR STOMATITIS. J. Infectious Dis. 105(2): 188-195, 2 figs. Sept.-Oct. 1959.
"The results of experimental exposure of crows and doves to vesicular stomatitis virus (VSV) indicate that the birds...are unlikely hosts for VSV in nature."

QUAIL

Dickey, Charley. (R. D. 2, Box 408, Greenwood, S. C.) MANAGEMENT OF THE BOBWHITE QUAIL ON SHOOTING PRESERVES. PART 3. Modern Game Breeding 29(8): 10-17, 5 photos. Aug. 1959.
Five types of cover for quail shooting preserves are recognized: stopping cover, escape cover, scenic cover, psychological cover and stocking cover. Timothy, wire grass, and weeping love grass are considered good stopping cover plants on preserves, while shrub lespedezas and multiflora rose are not. Other planting materials and techniques are discussed under each of the cover types listed. The fundamental principle regarding cover on shooting preserves is: cover should be designed so that no matter where a bird flies he can be followed up for another shot. Cover must be consistent with sporty shooting but still allow a good recovery percentage. Cover must look natural and not planned. Under shooting preserve conditions food plantings are secondary to cover plantings and are considered unnecessary. Pen-raised birds, however, have a craving for winter greens, and oats, rye, and rape may be used to supply this need. Dickey summarizes his section on dogs thus: "If you cannot raise, borrow, beg or buy dogs which are good retreivers, then you should stay out of the quail preserve business." [Reviews of parts 1 and 2 of this series will be found in WR 96: 61.]

Dickey, Charley. (R. D. 2, Box 408, Greenwood, S. C.) MANAGEMENT OF THE BOBWHITE QUAIL ON SHOOTING PRESERVES. PART 4. Modern Game Breeding 29(9): 10-18, illus. Sept. 1959.
This, the final part of the series, is packed with trade secrets for quail stocking on shooting preserves and answers in detail the questions on when, how, and how many to stock. The economics of the shooting preserve operation is covered with sections on recovery rates and charges. Shooting preserve terminology and general notes are included which are important to heed in the successful staging of a quail hunt. Shooting preserve operators will find much of fundamental value to them in this informative series of articles.

Haugen, Arnold O., and Daniel W. Speake. (Iowa Coop. Wildl. Res. Unit, Ames.) PROGRESS REPORT ON ALABAMA BOBWHITE QUAIL WING STUDY. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 260-269, 5 figs. 1958 (1959).
From 1952 to 1957, a total of 40,616 quail wings was examined. The percentage of young quail wings in the samples varied from 70.0 to 83.5 with an average of 77.6%. Eight hundred wings for each year were sufficient to estimate the percentage of young. Additional wing data did not alter the percentage by more than about 1%.

Kozicky, Edward L. (Olin Mathieson Chemical Corp., East Alton, Ill.) ESTIMATION OF AUGUST QUAIL POPULATIONS IN IOWA. Iowa Bird Life 27(3): 63-69. Sept. 1957.
A continuation of the work of Kozicky and others [see WR 86: 67]. A high correlation of occupancy of Iowa forties was found during 1955 and 1956 inventories (48% vs. 49%).

Murray, Robert W. (Fla. Game & Fresh Water Fish Comm., Tallahassee.) THE EFFECTS OF FOOD PLANTINGS, CLIMATIC CONDITIONS, AND LAND USE PRACTICES UPON THE QUAIL POPULATION ON AN EXPERIMENTAL AREA IN NORTHWEST FLORIDA. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 269-274, 4 figs. 1958 (1959).
Summers of lowest precipitation and highest temperature coincided with the years of lowest productivity. Quail population varied directly with acreage in cultivation and inversely with the acreage grazed. It is concluded that establishing food plantings on corn and peanut cropland in nw. Fla. does not

materially affect the quail population, but that the removal of this land from cultivation does seriously affect it, especially in times of drought when natural productivity is impaired.

Robinson, Thane S., and Rollin H. Baker. (State Biol. Surv., Lawrence, Kans.) CLIMATE AND BOBWHITE QUAIL IN KANSAS -- 1951-1954. Trans. Kans. Acad. Sci. 58 (2): 353-359, 2 figs. 1955.

Based on examination of almost 13,000 wings of Kans. bobwhite and analyses of 4 years of climatological data. The total amount of rainfall and the average temperature during the breeding season of bobwhites (April-Sept.) seem to influence the relative productivity for that year. Although both rainfall and temperatures are limiting factors with respect to bobwhite production, the effect of rainfall generally masks the effect of temperature. Only when rainfall reaches a critical minimum for good production of bobwhites does temperature become a recognizable limiting factor. Predictions of the productivity of bobwhites for any given year based only on the past year's productivity are invalid. Predictions on the productivity of bobwhites for any given year based on a critical analysis of the climatic conditions for the breeding season of bobwhites for the same year are valid. However, local variations in climatic conditions and the "buffering" effect of the habitat must be taken into account in making such predictions.--From authors' summ.

Schultz, Vincent. (U. Md., College Park.) FURTHER NOTES ON QUAIL DENSITY AND FARM COMPOSITION. J. Wildl. Mgt. 23(3): 354-355. July 1959.

Paper presents results of a multiple-regression analysis of quail coveys per 200 acres on the percentage of the total area in pasture, cropland and woodland for 3 Tenn. farming-types. Only in one farming type was there a significant regression sum of squares. There is little linear correlation of quail density to these independent variables.--Author.

Schultz, Vincent. (U. Md., College Park.) VITAMIN A AND OHIO BOBWHITE QUAIL DURING THE WINTER OF 1947-48. J. Wildl. Mgt. 23(3): 322-327. July 1959.

The vitamin A reserves of 128 wild bobwhite quail collected from 2 Ohio counties during the mild winters of 1946-7 and 1947-8 were determined. There was no indication that individuals of the populations sampled were suffering from avitaminosis A. In general, there were no significant differences between sexes, years, or counties in vitamin A storage or body weight.--Auth. abst.

Scott, David F. (Office of the Post Engineer, Ft. Campbell, Ky.) FIRE AND QUAIL MANAGEMENT AT FORT CAMPBELL, KENTUCKY. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 294-300, 4 figs. 1958 (1959).

From summary. (1) Prescribed burning as a quail management tool is applicable with certain modifications to areas other than the southern coastal plain. (2) Number of quail harvested/1000 A on a prescribed burn area was considerably higher than on a similar unburned area. (3) Hunting pressure increased considerably on a burned area one year after burning while it remained constant on a similar unburned area. (4) Hunter success increased on a burned area one year after burning despite the fact that hunter hours were doubled one year after burning. The success on a similar unburned area remained almost the same.

PHEASANTS

Breitenbach, Robert P., and Roland K. Meyer. (U. Wis., Madison.) EFFECT OF INCUBATION AND BROODING ON FAT, VISCERAL WEIGHTS AND BODY WEIGHT OF THE HEN PHEASANT (PHASIANUS COLCHICUS). Poultry Sci. 38(5): 1014-1026, 9 figs. Sept. 1959.

From weight measurement data collected from incubating and brooding ♀ pheasants, it was indicated that ♀ pheasants that have incubated a clutch and brooded young have seriously depleted their energy stores by the 11th day of brooding. The brooding hen will have progressed through a series of energy demanding physiological situations to which non-brooding birds are not subjected. The brooding birds are definitely handicapped in terms of attaining sufficient stores of energy to meet stressful late summer situations and in accumulating adequate energy stores to meet the rigors of winter.

Coles, Charles. EINE ÜBERSICHT ÜBER FASANENZUCHTMETHODEN IN GROSSBRITANNIEN. [REVIEW OF PHEASANT REARING METHODS IN GREAT BRITAIN.] Z. Jagdwissensch. 4(4): 192-203. Dec. 1958.

In German with English and French summaries. An account of the techniques and results obtained from pheasant research carried on at the I.C.I. Game Research Station (Fordingham, England). [See WR 97: 58 for a recent report on the work at this station.]--V. F. Flyger.

Duebbert, H. F. (N. Dak. Game & Fish Dept., Bismarck.) PHEASANTS AND AGRICULTURAL LAND USE. N. Dak. Outdoors 22(5): 10-14, illus. Nov. 1959.

Based upon transect surveys of primary and marginal pheasant range; 51,200 A sample for each range. Spring censuses indicated an average density of 120 pheasants per section on primary range and 15 pheasants per section on marginal range. For primary range, a roadside count in July revealed an average of 0.41 broods/mile, while marginal range produced 0.05 broods/mile. The best pheasant area in e. N. Dak. has 4 times as much marsh area, twice as many fencerows and field borders, twice as much land in hay and pasture, and more idle land than the poorer range. The winter food situation is apparently better in the primary range than in the marginal range. Two tables support these data.

Figala, Jaroslav. ON THE GROWTH AND MOLT OF OUR PHASIANIDAE. Sylvia 15: 119-149. 1958. [Bird-Banding 29(4), Oct. 1958.]

In Czech with German summary. Detailed observations on 34 hand-reared pheasants (Phasianus colchicus), partridges (Perdix perdix) and quail (Coturnix coturnix), results being given in 14 graphs and 3 tables. Particular attention is given to the attainment of flight.--M. M. Nice.

Mallette, Robert D., and Jack C. Bechtel. (Calif. Dept. Fish & Game, Sacramento.) MOVEMENT OF THE RING-NECKED PHEASANT IN THE SUTTER BASIN OF CALIFORNIA. Calif. Fish & Game 45(3): 189-202, 1 fig. July 1959.

Movements of 2,674 pheasants, of which 1,982 were wild birds and 692 were pen-reared, were analyzed during 1952-8. Retrapping and hunting season band returns were techniques used. Adult ♂♂ traveled 0.3 to 0.5 mile during the summer period of trapping. Juvenile ♂♂ moved up to 0.9 mile during the same summer of trapping. Adult ♀♀ moved up to 0.9 mile and juvenile ♀♀ 1.2 miles.

Tester, John R., and Lorentz Olson. (Mus. Nat. Hist., Minneapolis.) EXPERIMENTAL STARVATION OF PHEASANTS. J. Wildl. Mgt. 23(3): 304-309, 1 fig. July 1959.

Wild and artificially propagated ring-necked pheasants (Phasianus colchicus) were starved experimentally in outdoor pens in s. Minn. in Feb. 1956. The av. maximum temperature was about 25°F., and the av. minimum, about 4°F. Most of the birds succumbed after 16 days of starvation. In every phase of the experiment, artificially propagated birds survived longer than wild birds. The wild birds did not die until they had lost a higher percentage of their initial body weight than the game-farm birds. There was no significant difference in length of survival of ♂♂ and ♀♀. Pheasants starved in the shelter of a windbreak did not live longer than those starved in the exposed location. The mildness of the weather and the design of the experimental pens prevented an accurate comparison of sheltered and exposed sites. All birds exhibited characteristic behavior for a period of at least 24 hours preceding death. The excreta of starving birds provide another criterion for the detection of starvation in the wild.--Authors' summary.

GROUSE, PARTRIDGE, ETC.

I.C.I. Game Services. YOUR YEAR'S WORK (1958) / AN ANNUAL REPORT OF WORK DONE BY SCIENTISTS AND GAMEKEEPERS ON THE I.C.I. EXPERIMENTAL ESTATE. I.C.I. Game Res. Sta., Fordingbridge, Hampshire, Eng. 1-54 p., illus. 1959?

Included in this annual report is a summary of 10 yrs. research on wild partridges (1949-1958). Some of the averages obtained were: av. clutch (1st nests) - 15.2; av. clutch (successful nests) - 14.7; av. chicks/successful pair - 13.5; av. chicks/pair - 10.2; av. young/old pair (August) - 3.8. Nesting success was 75% with a chick survival of 37%. Material on the rearing and managing of pheasants and partridges under British conditions is presented as in past reports and should prove valuable to game farm workers.

Kingston, Newton, and Reino S. Freeman. (U. Toronto, Ont.) ON THE TREMATODES BRACHYLECITHUM ORFI SP. NOV. (DICROCOELIIDAE) AND TANAISIA SP. (EUCOTYLIDAE) FROM THE RUFFED GROUSE, BONASA UMBELLUS L. Can. J. Zool. 37(2): 121-127, 3 figs. Apr. 1959.

WESTERN STATES EXOTIC GAME BIRD COMMITTEE. ANNUAL REPORT, MAY 1, 1958--APRIL 30, 1959. [Not for publication.] [1959.]

Progress reports from various western states, provinces, and Hawaii. Sex and age ratios, status, reproduction, bags and narrative summaries of new introductions are among the subjects covered in these reports. Some findings: Ariz. Ten broods of chukars were observed with av. of 9.3 young/brood. Black francolins survived 3 winters in an area where minimum temperatures are below known temperatures in its native range. Calif. Barbary partridge, black francolins, gray francolins, French red-legged partridge, Spanish red-legged partridge, Greek chukar, Turkish chukar, coturnix quail and Erckel's francolin are among game birds considered for introduction, or currently being stocked. Interest wanes in coturnix following an unsuccessful stocking of 11,000 birds. Colo. Av. brood size of 52 chukar broods was 10.9. High reproductive success. Estimated kill (4 day season) probably did not exceed 5-10% of population. Hawaii. Hunter success for chukars on Maui was 1.75/trip in 1958 as compared with 1.77 in 1957. Idaho. Results from a hunter questionnaire showed a kill of 69,075 chukars in 1958--treble that of 1957. Nev. Narrative account of 2 months of trapping in India. One hundred ninety common sand grouse and 555 gray francolins were captured. Ore. The random hunter survey showed 91,558 chukars killed in 1958; total released since 1951 were 66,296. Bamboo partridges from Japan have been received for use as game-farm brood stock. Tex. A release of 488 wild-trapped chukars from Nev. was made. Approximately six months later, 25 were still present at release site. Utah. Harvest for 1958: 19,578 chukars by 11,174 hunters. Wash. More than twice as many chukars were taken in 1958 season than that of previous high--128,100 as compared with 63,100 in 1952. Ten bands received from 4,900 coturnix banded in July-Sept. 1958. All movements southerly. Maximum migration was 130 miles. Wyo. Almost 30,000 chukars have been released by State Bird Farm since 1938.

Westerskov, Kaj. (N. Z. Wildlife Service, Wellington.) ALTERSBESTIMMUNG UND SCHLÜPFZEITDATIERUNG MIT HILFE DER HANDSCHWINGEN EUROPÄISCHER HÜHNERVÖGEL. [DETERMINATION OF AGE AND HATCHING DATE FOR GAME BIRDS BY MEANS OF PRIMARY FEATHERS.] Z. Jagdwissensch. 4(3): 130-138, 4 figs. 1958.

In German with summaries in English and French. General description of wing molt plus specific information on willow ptarmigan, red-legged partridge, partridge, and the pheasant. Impressive bibliography.--V. F. Flyger.

Wilson, John E. (P. O. Box 84, Watertown, N. Y.) THE STATUS OF THE HUNGARIAN PARTRIDGE IN NEW YORK. Kingbird 9(2): 54-57. July 1959.

Principal Hungarian partridge range in N. Y. is restricted to soils of limestone origin in the St. Lawrence River valley and e. Lake Ontario basin, an area of about 3,000 sq. mi. Birds were stocked from 1927-32 and further stocking is considered unnecessary. Winter mortality on a 75 sq. mi. study area averaged 12% during a 5-yr. period. Occasional winter losses of 50% or more not considered limiting factors. Less than 10% of total fall population harvested annually since 1952.

TURKEY

Latham, Roger Marion. FACTORS AFFECTING DISTRIBUTION AND ABUNDANCE OF WILD TURKEYS IN PENNSYLVANIA. Ph.D. thesis, Pa. State U. 154 p. 1958. [From long abstract in Dissertation Abstracts 19(12).]

Of the physical properties, only climate and range size were found to be significantly effective in controlling turkey distribution and abundance. Topography, soil, and water were found to be relatively negative. Forest age and plant community composition were found to exert a control on numbers and distribution, but forest type (oak-hickory and beech-birch-maple) was of little importance. Predation and competition, although somewhat restrictive, were not found to be controlling. Diseases and parasites appeared to be responsible for

the reduction of excessively high local population in several instances, but did not appear to place undesirable limits on distribution or abundance. Urbanization, industrialization, and cultivation affected the turkey. Clear-cutting on a large scale and forest fires produce large areas of brushy growth unsuited to turkey. Excessive hunting was found to be the factor most limiting to abundance, and in part to distribution. Human disturbance rated closely with predation as a cause of nesting failures. Hunting restrictions, refuges and habitat management were the factors most conducive to high populations and wide distribution of wild turkeys. Predator control, emergency winter feeding and stocking of pen-reared turkeys were a waste of money. The trapping and transfer of wild stock is recommended to replace the artificial propagation program. Sixteen management recommendations are offered.

Powell, James A., and Louis F. Gainey. (Fla. Game & Fresh Water Fish Comm., Tallahassee.) THE AERIAL DROP METHOD OF RELEASING WILD TRAPPED TURKEYS FOR RESTOCKING PURPOSES. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 212. 1958 (1959).

Aerial release of turkeys in Fla. was initiated in 1956. Birds are released from approximately 200 ft. altitude from plane at 45 mph. airspeed. No losses among 94 turkeys released.

DOVES AND PIGEONS

Beckwith, Stephen L. (U. Fla., Gainesville.) MOURNING DOVE FOODS IN FLORIDA DURING OCTOBER AND DECEMBER. J. Wildl. Mgt. 23(3): 351-354. July 1959.

A comparison is made of food habits of Zenaidura macroura from se. Fla. (e.g., Dade County) during October with those of birds from n.-cent. Fla. (e.g., Alachua County) during October and December. Vegetable matter comprised an excess of 99.7% of the total food. Dade County birds subsisted principally upon seeds of Argemone spp. and Ambrosia elatior, but Croton sp. and Paspalum sp. were also consumed. In contrast, Alachua County birds fed largely on Arachis hypogaea and Zea mays during both months. Setaria geniculata, Croton sp., and Phytolacca americana were important additional foods in October and Ambrosia elatior was a supplemental food in December. Differences in food habits were related to differences in principal agricultural crops grown and their associated weeds.--Auth. abst.

Browning, Bruce M. (Calif. Dept. of Fish & Game, Sacramento.) AN ECOLOGICAL STUDY OF THE FOOD HABITS OF THE MOURNING DOVE. Calif. Fish & Game 45(4): 313-331, 5 figs. Oct. 1959.

A total of 275 mourning dove crops was examined, including the contents of 70 nestling crops. The food consisted of 99.6% seeds and 0.4% animal food items. Eleven of the 71 different plant species seeds identified comprised over 97% of the food found in the crops. Three important items were: turkey mullein, red maids and wheat. It is apparent that the mourning dove is highly selective in its diet.

Johnston, Richard F. (U. Kans., Lawrence.) OCCURRENCE AND STATUS OF THE GROUND DOVE IN KANSAS. Kans. Ornith. Soc. Bul. 10(3): 9. Sept. 1959.

In Kans., as elsewhere in midwestern U. S., the occurrence in winter of the ground dove is best considered as sporadic.

Kiel, Wm. H., Jr. (Patuxent Wildl. Res. Center, Laurel, Md.) MOURNING DOVE MANAGEMENT UNITS / A PROGRESS REPORT. US F&WS, Spec. Sci. Rep.--Wildl. no. 42. iv + 24 p., 4 figs. June 1959.

Tentative mourning dove management units for the U. S. are outlined on the basis of an analysis of bandings during 1953-7. The 3 units--Eastern, Central, and Western--most nearly meet criteria of an ideal management unit: a unit that produces the doves it harvests and does not produce doves that are harvested by other units. As an average for the 3 units, 95% of kill is produced within the unit and 96% of production is shot within the unit or in Mex. and Central Am. Hence the 3 units are practically independent of each other.

Uzzell, Pierce. (Texas Game & Fish Comm., Austin.) RALLY THE WHITEWING. Texas Game & Fish 17(9): 4-6, illus. Sept. 1959.
The white-winged dove population in Texas declined after World War II due to the accelerated clearing of cover during and after the war. Populations reached peak level of 1,039,000 in 1950 when the birds switched from native brush nesting habitat to citrus groves. A severe ice storm after the successful hunt of 1950 resulted in a new low population (about 10% of the peak). Since 1954, there has been an increase in population to 1959 with a slight decline in 1958.

WATERFOWL

Anderson, Harry G. (2635 Jersey Ave., St. Louis Park, Minn.) FOOD HABITS OF MIGRATORY DUCKS IN ILLINOIS. Ill. Nat. Hist. Surv., Bul. 27(4): iv + 289-344, 18 figs. Aug. 1959.
A study based upon 4,977 gizzards from ducks of 17 spp. collected in Ill. during 1938-40. Most Ill. ducks are predominantly vegetarians feeding principally on native wild plants. The lesser scaup is the only sp. with a diet predominantly animal. Of the 95 wild plants and 4 cultivated plants found in the gizzards, the following ranked high in importance: corn, rice cutgrass, marsh smartweed, coontail, wild millet and longleaf pondweed. Snails and mussels provided the largest animal food volume and occurrence followed by insects. Grit constituted 11-28% of the gross contents of the gizzards of the various duck spp. More than 200 of the gizzards examined contained lead shot pellets that had been ingested.--From auth. summ.

Bellrose, Frank C. (Ill. Nat. Hist. Surv., Urbana.) LEAD POISONING AS A MORTALITY FACTOR IN WATERFOWL POPULATIONS. Ill. Nat. Hist. Surv., Bul. 27(3): 235-288, 9 figs. May 1959. 50¢.
This bulletin evaluates the importance of lead poisoning on the basis of (1) the incidence and magnitude of waterfowl die-offs attributable to this disease, (2) the incidence of ingested lead shot as obtained from the examination of gizzards, and (3) the extent of waterfowl losses resulting from the ingestion of various quantities of lead shot. Outbreaks of lead poisoning of ducks have occurred more commonly in the Mississippi Flyway than in other flyways, and more commonly with mallards. The annual rate of loss of mallards in outbreaks of this malady in the Mississippi Flyway was estimated to be 1%. In addition, day-to-day losses which pass unnoticed were estimated to be on the order of 3% for the mallard. For all species of waterfowl in N. A., the annual loss due to lead poisoning was estimated at 2 to 3%. An effort to find a lead alloy shot pellet that was nontoxic to ducks was unsuccessful. Iron was the only metal found which proved to be both nontoxic and still potentially suitable for shotshell pellets. The principal disadvantage of iron pellets for shotshells is their loss in velocity at maximum ranges.--From auth. abst.

Bowhay, Ellis, Robert Jeffrey, and Charles Martinsen. (Wash. State Dept. Game, Olympia.) A SUMMARY OF THE 1958 WATERFOWL HUNTING SEASON. Wash. State Game Bul. 11(3): 3, 8. July 1959.
A statistical analysis of 1958 hunting season, results of winter inventory, and banding summaries for the in-season and post-season periods. Harvest was 1,063,600 waterfowl, 34% above 1957. This is 23% higher than the 10-yr. av. Breakdown of state duck bag: mallard 42%; widgeon 28%; green-winged teal 12%; and pintail 11%. The Jan. 1959 inventory was 1,123,077 waterfowl, the highest such count for state.

Coulter, Malcolm W. (Me. Coop. Wildl. Res. Unit, Orono.) A NEW WATERFOWL NEST TRAP. Bird-Banding 29(4): 236-241, 1 fig. Oct. 1958.
Description, materials list, and operation of a purse string closing, basketball net-type nest trap which "has been used since 1954 with slightly over 80 per cent success" for capturing wary ♀ black ducks in Me.

Decker, Eugene. (Westmoreland Sanctuary, Mt. Kisco, N. Y.) A 4-YEAR STUDY OF WOOD DUCKS ON A PENNSYLVANIA MARSH. J. Wildl. Mgt. 23(3): 310-315. July 1959.

Wood duck (Aix sponsa) studies were conducted on Conneaut Marsh in nw. Pa. by the Pa. Coop. Wildl. Res. Unit during 1953-6. This marsh was a major breeding area for wood ducks and the study was concerned with usage of boxes erected prior to study. Number of boxes decreased from 79 to 32 during the 4-year study. Collapse of the supporting snags and deterioration of the boxes were the major cause of this loss. Forty-five boxes were used by the ducks in 1953, since then there was a continual decrease and only five boxes were used in 1956. Incubating ducks were banded but only 8 of the 45 banded returned to nest. The best return, 5, occurred in 1955 which probably reflected the poor early hunting conditions of the previous fall when the kill was light. Raccoons were the most serious predator on the area, destroying 46% of the clutches each of the first 2 years. This predation was practically eliminated by use of smaller elliptical entrance holes, 3" x 4", cut in pieces of exterior plywood and placed over the larger holes on the boxes. Metal tunnel entrances, 4" in diameter and 6" long, also prevented raccoon predation. Hunter surveys revealed that hunting pressure was heaviest during the first few days of the season and that the wood duck made up a large portion of the kill. The decline of the wood duck population was attributed to (1) heavy early gunning pressure, (2) lack of suitable refuges and (3) the behavior of the ducks. The wood ducks were reluctant to leave their favored flooded wooded cover and on being flushed were constantly in range of the many hidden gunners. Establishment of small refuges in suitable cover and a later waterfowl gunning season are suggested as measures to prevent serious declines in native wood duck populations.--Author.

Dzubin, Alex. (Can. Wildl. Serv., Saskatoon, Sask.) GROWTH AND PLUMAGE DEVELOPMENT OF WILD-TRAPPED JUVENILE CANVASBACK (AYTHYA VALISNERIA). J. Wildl. Mgt. 23(3): 279-290, 6 figs. July 1959.

Weights and body measurements of 122 known-age canvasback, prior to fledging, are compared to spring adults. Young attained flight between 56-68 days of age. From hatching to flying stage, weight increased from about 45 grams to near 1,000 grams, culmen from 17.1 mm. to 56.4 mm., and tarsus from 26.1 mm. to 55.8 mm. ♂♂ av. larger than ♀♀. Measurements are included for growth of primaries, secondaries, scapulars, and rectrices. Eight plumage classes, based on size in relation to brood hen, weight, presence or absence of down areas, and general feathering, are delineated. Photographs and descriptions are presented for each class.--Author.

Fleming, Wesley B. (Ariz. Game & Fish Dept., Phoenix.) MIGRATORY WATERFOWL IN ARIZONA. Ariz. Game & Fish Dept., Wildl. Bul. no. 5. iv + 74 p., illus. June 1959.

Tables (13), 4 unnumbered maps and 8 unnumbered graphs serve to summarize the status of the waterfowl spp. and their distribution, migration and kill. Information on food habits, waterfowl habitat, and nesting is also included. The development of 6 major waterfowl areas in Ariz., and the problems--present and prospective--of waterfowl research are discussed.

Geis, Aelred D. (Patuxent Wildl. Res. Center, Laurel, Md.) ANNUAL AND SHOOTING MORTALITY ESTIMATES FOR THE CANVASBACK. J. Wildl. Mgt. 23(3): 253-261. July 1959.

Mortality rates of canvasbacks were estimated from band recovery records. The annual rate of mortality of immatures during the first year was 77%. Annual mortality rates of adults ranged from 35-50%. Mortality rates of ♀♀ were higher than those of ♂♂. Relatively larger numbers of immatures and adult ♀♀ were shot early in the hunting season, and relatively larger numbers of ♂♂ were shot late in the hunting season. Hunting was estimated to account each year for more than half the deaths of canvasbacks of flying age. Comparisons of band recovery rates in years of different hunting regulations showed that both season length and daily bag limit affected the hunting kill.--Auth. summ.

Grenquist, Pekka. ZUSAMMENARBEIT BEI DER WASSERGEFLÜGELFORSCHUNG IN NORD- UND WESTEUROPA. [COOPERATION IN WATERFOWL RESEARCH IN NORTHERN AND WESTERN EUROPE.] Z. Jagdwissensch. 4(4): 188-191. Dec. 1958.
In German with summaries in English and French. An account of past co-operation in waterfowl research in the Scandinavian countries and a new program agreed upon by the workers in these countries which will yield even greater cooperation.--V. F. Flyger.

Hanson, Harold C. (Ill. Nat. Hist. Surv., Urbana.) THE INCUBATION PATCH OF WILD GEESE: ITS RECOGNITION AND SIGNIFICANCE. Arctic 12(3): 138-150, 5 figs. Sept. 1959.
The incubation patch in geese may have considerable use in population studies on the breeding grounds. It can be used throughout the flightless period as a convenient aid, in addition to cloacal characters, in distinguishing older ♀♀ from yearling ♀♀ and adult ♀♀ from adult ♂♂. By its use it was found that breeding in the wild often begins at 2 years instead of 3. Previously the 2-year-old age class was not separable from older geese, either by cloacal or plumage criteria.

Hochbaum, H. Albert. THE CANVASBACK ON A PRAIRIE MARSH. Stackpole Co., Harrisburg, Pa., and the Wildlife Management Institute, Washington, D. C. xii + 207 p., illus. 2d edition. 1959. $4.50.
This classic which has been unavailable since 1950 is brought up-to-date by five pages of supplementary notes to the nine chapters and an additional bibliography covering the 1959 addenda.

Huntington, Earl H., and Austin A. Roberts. (N. Mex. Dept. Game & Fish, Santa Fe.) FOOD HABITS OF THE MERGANSER IN NEW MEXICO. N. Mex. Dept. Game & Fish Bul. no. 9. 36 p., 6 figs. (graphs & maps) + unnumbered photos. 1959.
From summaries of the two papers included in this bulletin. Investigation of the relative abundance of fishes was done on many of the waters where mergansers were taken. Fish population studies showed a large percentage of rough fish in most waters studied, with the exception of Conchas Reservoir, where game fish were predominant. Analysis of the contents of merganser gullets and gizzards indicated a correlation, in most cases, between percentage of catch of each species of fish taken by mergansers and that shown during fisheries studies. Studies were made regarding fishing success by mergansers as related to (1) wind velocities and (2) to size of feeding flock.

Longwell, John R., and Vernon Stotts. (Md. Dept. Res. & Educ., Annapolis.) SOME OBSERVATIONS ON THE RECOVERY OF DIVING DUCKS BANDED IN THE MARYLAND PORTION OF CHESAPEAKE BAY. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 285-291, 1 fig. 1958 (1959).
A total of 13,269 waterfowl of 3 spp. (lesser scaup, redhead and canvasback were banded in Md. during 1952-7). From these, 1,125 band recoveries were reported from 33 states, 6 Canadian provinces and the Bahamas. Sex and age ratio data and mortality rates for adults are tabulated.

Matthews, G. V. T. BRITISH LITERATURE ON EUROPEAN WILDFOWL. Tenth Annual Report Wildfowl Trust: 162-175. 1959.
This list is limited to books, papers and notes published in Britain which dealt specifically with the European Anatidae. It covers the period 1945-57. General faunal studies with references to wildfowl are not included.

Ranwell, D. S., and B. M. Downing. (Nature Conservancy Res. Sta., Furzebrook, Wareham, Dorset, Eng.) BRENT GOOSE (BRANTA BERNICLA (L.)) WINTER FEEDING PATTERN AND ZOSTERA RESOURCES AT SCOLT HEAD ISLAND, NORFOLK. Anim. Behaviour 7(1/2): 42-56, 6 figs. + 6 photos on 2 pls. Jan.-Apr. 1959.
Food habits were studied through field observations of feeding analysis of droppings and experiments with captives. The 3 main types of food, Zostera, Enteromorpha, and higher salt-marsh plants, were favored successively in the diet during the season when each was in its most active growth phase. Diets were more varied and secondary foods more important than previously recognized. Feeding trials showed that analyses of droppings gave a good approximation of the proportions of food actually ingested. Nutritional analyses of the main foods and of droppings are reported.--L. F. Stickel.

Schroeder, Charles H. (316 S. 11th St., Bismarck, N. Dak.) RESULTS OF THE 1958 WATERFOWL HUNTING SEASON. N. Dak. Outdoors 22(2): 9, 15. Aug. 1959.

Duck harvest for 1958 in N. Dak. was about 380,000, down 31% from 1957. Approximately 22,500 geese were harvested in 1958--a 94% increase from the 11,600 geese harvested in 1957.

Schroeder, Charles H. (316 S. 11th St., Bismarck, N. Dak.) NO WATER! NO DUCKS! N. Dak. Outdoors 22(4): 4-5, 2 figs. Oct. 1959.

A summarization of data collected during annual duck breeding ground surveys for the period 1948-59. The correlation between number of ducks and water areas per sq. mile is high (correlation coefficient = + 0.92). Compared with the 1948 through 1958 average, the 1959 breeding population was down 46%, and the 1959 water area was down 55%.

Scott, Peter, and Hugh Boyd, editors. THE TENTH ANNUAL REPORT OF THE WILDFOWL TRUST, 1957-1958. Publ. for Wildfowl Trust (Slimbridge, Gloucestershire, Eng.) by F. Bailey & Son, Ltd., Dursley, Gloucestershire, Eng. 184 p., illus. + 32 pls. 1959. 10s.

The Wildfowl Trust Annual Reports are known to most wildfowl students. This report continues on in the fine tradition which has been set earlier and the diversity of the papers presented is indicated by the titles: Notes on the 1958 breeding season; Winter wild geese at the New Grounds 1957-58; Ringing 1957-58; Duck adoption scheme; National wildfowl counts; Basic data from wildfowl counts; Techniques in wildfowl taxonomy; Causes of death of birds at Slimbridge, 1955-57; The control of aspergillosis in bird collections; Greylag geese in Britain in winter; Movements of marked sea and diving ducks in Europe; Wildfowl conservation in Denmark; The conservation of waterbirds and their habitat in New Zealand; Establishing Canada geese in West Kent and their use of nesting rafts; Brent geese in Essex, 1957-1958; Recent research on brent geese; What makes plumage waterproof?; A goose-watching visit to northern Iceland; Some observations on wild geese in Spitsbergen [distribution, breeding success, nest sites, brooding, and moult]; Waterfowl at Cold Bay, Alaska, with notes on the display of the black scoter; Wildfowl of the Hemiarctic; Impressions of wildlife in Canada in the spring of 1958; and A visit to some European zoos. [Matthews' British literature on European wildfowl, which is also included, is entered in this issue of WR.]

Stewart, Paul A. (US F&WS, Room 304, Post Office Bldg., Gadsden, Ala.) THE "ROMANCE" OF THE WOOD DUCK. Ohio Coop. Wildl. Res. Unit Rel. 210. 5 p. + map. July 1959.

This article was published in Audubon Magazine 61(2): 62-65, Mar.-Apr. 1959, and reviewed in WR 96: 68.

Stotts, Vernon D. (Md. Game & Inland Fish Comm., Annapolis.) USE OF OFFSHORE DUCK BLINDS BY NESTING WATERFOWL IN THE MARYLAND PORTION OF THE CHESAPEAKE BAY AND ITS ESTUARIES. Proc. 12th Ann. Conf. SE. Assn. Game & Fish Comms.: 280-285. 1958 (1959).

History and description of offshore blinds and their utilization by nesting ducks. Approximately 10% of blinds are used; and in a sample of 134 black duck and mallard clutches found in blinds, 52% hatched. (On land, 59% of 92 black duck clutches hatched.) On land, crows took 16% of the clutches; but in blinds, they took only 6%. Raccoons destroyed none of land-based nests while taking 9% of the blind clutches. Cedar and grass-brushed blinds were used significantly more often than were pine-brushed blinds. Sixty-eight per cent of 175 nests found during 5 years were located on the roofs of blinds. Eight management suggestions are offered to promote use of blinds by nesting ducks.

Yelverton, Carl S., and Thomas L. Quay. (Back Bay Natl. Wildl. Refuge, Princess Anne, Va.) FOOD HABITS OF THE CANADA GOOSE AT LAKE MATTAMUSKEET, NORTH CAROLINA. N. C. Wildl. Res. Comm. 44 p., 20 figs. March 1959.

A study of the wintertime food habits of Canada goose, based on 263 gizzards and 31 crops collected during 1951-2 and 1953-4 hunting seasons. Evaluation of the habitats at Lake Mattamuskeet was made and Eleocharis drawdown flats rated high. In the stomach analyses, the per cent volume is considered to be the most valid index, although total frequency, volume and per cent frequency of the food items are tabulated. Sedges (Cyperaceae) constituted 63% of total food volume,

and grasses (Gramineae) 33%. The most important species, and principal parts taken, were: 1. Eleocharis olivacea and E. parvula--roots and culms; 2. Scirpus americanus--roots and rhizomes; 3. Zea mays--grains.

CRANES, RAILS, SHOREBIRDS

Bettmann, H. ZUM RÜCKGANG DER WALDSCHNEPFE (SCOLOPAX RUSTICOLA). [THE DECLINE OF WOODCOCK (SCOLOPAX RUSTICOLA).] Z. Jagdwissensch. 4(1): 41-43. 1958.

In German. Decrease in suitable habitat has resulted in a decline of the woodcock population, and the resultant level is a fraction of that which prevailed previously. The author makes a strong plea for a spring hunting season rather than a fall and winter one since fewer ?? (10% or less) are shot in the spring than in fall when 40% of kill is ??.--V. F. Flyger.

Ehlert, Wilfried. THE FOOD OF THE HERRING GULL IN THE PREBREEDING SEASON. Ornithologische Mitteilungen 9: 201-203. 1957. [Bird-Banding 29(2), April 1958.]

[In German.] The examination of 2,901 regurgitated pellets of the herring gull revealed that 92.7% of the pellets contained only one food species. Cardium edule [cockles] were the only type of food in 64.6% of the pellets which contained from 11-14 animals. Baltic macoma, another bivalve, were next in occurrence and were the only type of food in 11.5% of the pellets with 100-140 individuals per pellet.--R. O. Bender.

Mörzer Bruijns, M. F. GULLS WHICH ARE A MENACE TO OTHER SPECIES / THE HERRING GULL PROBLEM IN THE NETHERLANDS. Reprinted from VII Bul. Internat. Com. Bird Preserv. p. 103-107. 1958.

Herring gull (Larus argentatus) populations in the Netherlands have doubled since the 1926 census thereby endangering other breeding birds. In places the young of pheasant, partridge, rabbit, hare and poultry are taken by gulls. Herring gull increases continued despite poisoning campaigns with strychnine-nitrate which killed up to 25% of breeding populations some years. Recruitment is indicated. Stringent control via poisons, egg removal, nest destruction and the chasing and shooting of birds on selected areas is needed in order to maintain the population level at 10,000 pairs. Investigations about migration, population dynamics, food biology, etc. must go hand in hand with control.

Moynihan, M. (Canal Zone Biol. Area, Panama.) NOTES ON THE BEHAVIOR OF SOME NORTH AMERICAN GULLS. I. AERIAL HOSTILE BEHAVIOR. Behaviour 10: 126-178. 1956. [From Ibis 100(1), Jan. 1958.]

Moynihan, M. (Canal Zone Biol. Area, Panama.) NOTES OF THE BEHAVIOR OF SOME NORTH AMERICAN GULLS. II. NON-AERIAL HOSTILE BEHAVIOR OF ADULTS. Behaviour 12(1/2): 95-182, illus. 1958. [From Biol. Abst. 33(9).]

Moynihan, M. (Canal Zone Biol. Area, Panama.) NOTES ON THE BEHAVIOR OF SOME NORTH AMERICAN GULLS. III. PAIRING BEHAVIOR. Behaviour 13(1/2): 112-130. 1958. [From Biol. Abst. 33(9).]

Moynihan, M. (Canal Zone Biol. Area, Panama.) A REVISION OF THE FAMILY LARIDAE (AVES). Am. Mus. Novitates 1928: 1-42, illus. 1959. [From Biol. Abst. 33(9).]

A revised classification of the family Laridae, based largely upon a comparative analysis of behavior.

Riggins, Martha Ann. (U. Okla., Norman.) A STUDY OF THE HELMINTH PARASITES OF CERTAIN SHOREBIRDS FROM LAKE TEXOMA, OKLAHOMA. Proc. Okla. Acad. Sci. 34: 57-59. 1953.

Study of helminths from 8 spp. of shorebirds and the redwing. Eighty-one birds were examined; 28 spp. of helminths were found in 54 infected hosts. First recorded work on the helminths of semi-palmated sandpiper. Twenty-four new host parasite records are established by this study, including 11 new parasite records for N. A. and 25 new parasite records for Okla.

Rooth, J. RELATIONS BETWEEN BLACK-HEADED GULLS (LARUS RIDIBUNDUS) AND TERNS (STERNA SPEC.) IN THE NETHERLANDS. Reprinted from VII Bul. Internat. Com. Bird Preserv. p. 117-119. 1958.

Interspecific relations between the black-headed gull and 4 species of tern in the Netherlands. Black-headed gull has better chances of surviving and their number is fairly constant while tern populations may fluctuate considerably. Restriction of black-headed gull numbers by collecting its eggs is suggested.

Rooth, J., and M. F. Mörzer Bruijns. THE SANDWICH TERN (STERNA S. SANDVICENSIS LATH.) AS A BREEDING-BIRD IN THE NETHERLANDS. Limosa 32(1-2): 13-23. 1959.

In Dutch with English summary. About 4/5 of the total nw. European breeding population of sandwich tern is found in the Netherlands. In 1954-7 the Netherlands population ranged from 25,000 to 40,000 breeding pairs. The terns breed in 7 greater colonies where they nest yearly. Other breeding sites (6) are known--all sites are mapped. Numbers of breeding pairs fluctuate greatly per colony, and a certain interaction between colonies could be found. The total number of pairs in Netherlands is more constant than are the number in each colony. Fluctuations are great and usually attributed to inclement weather in the period shortly after hatching. Influence from the black-headed gull which often breeds near or in the tern-colonies is not as bad as is sometimes supposed. Three of the 7 greater permanent colonies are threatened with extinction. Other colonies should be given the status of reserve.

Russell, Dan. (Ky. Dept. Fish & Wildl. Resources, Frankfort.) WOODCOCK, WILSON'S SNIPE / STUDIES IN KENTUCKY. Ky. Dept. Fish & Wildl. Resources, P-R Project W-31-R. ii + 19 p., 4 maps, 3 graphs, 6 tables. [1959.]

A welcome little pamphlet that summarizes what is known of seasonal abundance, distribution, and habitats of woodcock and snipe in Ky. Woodcock occur throughout Ky. Some are present throughout year. Greatest abundance by far is during migration, with peaks in Mar. and Nov. The birds are most often observed in wooded habitats. Woodcock in Ky. are shot only incidental to hunting for other game. Av. statewide kill is about 3,500. Two woodcock banded in La. were recovered in Ky. in later years. 21 nests found in Ky. in Mar. and Apr. are listed and number of eggs, date, and habitat are stated for each. The 8 known broods are treated similarly. Results of singing ground counts are tabulated. Attempts were made to census woodcock on given areas in spring and fall, but in the best fall month only 1 bird was seen for each 8.3 man-hours.

Snipe also are generally distributed in Ky. Peak of observations is in spring and there is a much lower peak in fall. Snipe have not been seen in Ky. in June, July, and Aug. and they do not breed in the State. The birds are most often seen in wet areas of various types. Snipe in Ky. are shot only incidentally and the annual kill av. about 1,800.--W. H. Stickel.

OTHER BIRDS

Berger, Daniel D., and Helmut C. Mueller. (Cedar Grove Ornith. Sta., Cedar Grove, Wis.) THE BAL-CHATRI: A TRAP FOR THE BIRDS OF PREY. Bird-Banding 30 (1): 18-26, 3 figs. Jan. 1959.

During...two and one-half years, more than 400 hawks and owls of 7 spp. (mostly Am. kestrels) were trapped by a modified form of an old Indian trap called the bal-chatri. Several different types are used for the various spp. of raptors. House mice have been found to be the best all-around lure. The trapping technique usually involves dropping the bal-chatri from a moving automobile in view of a perching hawk. Those that strike almost invariably become entangled within seconds in snares which cover the top of the trap.--From summ.

Gilliard, E. Thomas. (Am. Mus. Nat. Hist., N. Y. 24, N. Y.) TYTO ALBA. PART I. Nat. Hist. 67(5): 238-245, illus. May 1958.
A well-illustrated popular account of the distribution of the barn owl and 8 other members of Tytonidae. The barn owl has managed to reach and populate most of the world's major land areas. Night feeding, random dispersal of young, and possibly the global dispersion of man and the rodents associated with man are considered the primary factors in the barn owl's world-wide range.

McNally, J. THE FEEDING HABITS OF CORMORANTS IN VICTORIA [AUSTRALIA]. Victoria Fish & Game Dept., Fauna Contrib. no. 6. 1-36 p. 1957. [From Auk 76(3).]
Stomach contents and feeding methods of the following: Phalacrocorax carbo, P. sulcirostris, P. varius, P. melanoleucus, P. fuscescens, and Anhinga novae-hollandae. Weights by sexes are also given.

Meng, Heinz. (State U. Teachers Coll., New Paaltz, N. Y.) FOOD HABITS OF NESTING COOPER'S HAWKS AND GOSHAWKS IN NEW YORK AND PENNSYLVANIA. Wilson Bul. 71(2): 169-174, 2 figs. June 1959.
The starling, yellow-shafted flicker, eastern meadowlark, eastern chipmunk, crow, and red squirrel were utilized heavily by Cooper's hawk and goshawk.

Payne, Roger S., and Wm. H. Drury, Jr. (Cornell U., Ithaca.) TYTO ALBA.] PART II. MARKSMAN OF THE DARKNESS. Nat. Hist. 67(6): 316-323, illus. June-July 1958.
This supplements Gilliard's account (see above) of the barn owl and tells how these owls can locate their quarry at night. The anatomical features of the owl are described to indicate that the owl is well adapted for hearing its prey and uses its eyes to avoid obstacles such as branches and twigs. Drawings, photographs and text are used to advantage in showing these adaptions and the experimental work carried on at Cornell on the mechanism of the owl's hearing is presented in a popular manner.

Rainey, Dennis G., and Thane S. Robinson. (U. Kans., Lawrence.) FOOD OF THE LONG-EARED OWL IN DOUGLAS COUNTY, KANSAS. Trans. Kans. Acad. Sci. 57(2): 206-207. 1954.

Van Wijngaarden, A., and B. Lensing. ON THE KESTREL'S HUNTING HABITS. Levende Natuur 60(2): 47. 1957. [From Biol. Abst. 33(12).]
Kestrels were observed hunting for voles. Voles were abundant and more were caught than could be eaten. Several dead voles were hidden by kestrels. Per capita consumption by birds of prey is therefore of doubtful value in calculations on influence of predation on vole population.--P. Korringa.

REPTILES AND AMPHIBIANS

Boyer, Don Raymond. BIOLOGICAL IMPLICATIONS OF THE BASKING HABIT IN TURTLES. Ph.D. thesis, Tulane U. 133 p. 1958. [From abst. in Dissertation Abst. 19 (12).]

Boys, Floyd, and Hobart M. Smith. POISONOUS AMPHIBIANS AND REPTILES / RECOGNITION, AND BITE TREATMENT. Charles C. Thomas, Springfield, Ill. xiii + 149 p., 30 figs. 1959. $4.75.
One is immediately impressed with the accuracy, completeness, and readability of this handy book written by a physician and a herpetologist. In addition to having 5 parts covering venomous animals in general, poisonous amphibia, poisonous turtles, venomous lizards and venomous snakes, there are parts (sections) on precautions against snakebites, recognition of poisonous snakes and their bites, first aid and medical treatment. These latter 2 parts are particularly valuable since they outline step-by-step first aid treatment, and summarize and evaluate various techniques for medical treatment. This up-to-date book should have wide circulation among sportsmen, wildlifers and those associated with the medical profession. One map is of interest for it indicates that venomous snakes occur in each of the 48 states, although in several states the snakes barely cross the border. One omission which could be remedied in

subsequent editions is a list of common and scientific names of the venomous spp. found in the U. S. There are no scientific names of the species treated although there are distribution maps and illustrations of the major species of venomous reptiles.

Bragg, Arthur N. (U. Okla., Norman.) BEHAVIOR OF TADPOLES OF HURTER'S SPADEFOOT DURING AN EXCEPTIONALLY RAINY SEASON. Wasmann J. Biol. 17(1): 23-42. Spring 1959.

Chaney, Allan Harold. A COMPARISON OF LOUISIANA AND ARKANSAS POPULATIONS OF DESMOGNATHUS FUSCUS. Ph.D. thesis, Tulane U. 140 p. 1958. [From long abst. in Dissertation Abst. 20(1).]

Studies based on 1,736 specimens on geographic variations of the dusky salamander indicated that the Arkansas populations differed from the Louisiana populations in: ecological habitat occupied, time of egg deposition, number of eggs deposited, outward appearance and size of larvae at hatching, time of metamorphosis, color pattern of both larvae and adults, growth rate, head length/head width ratio, length of tail, time and size of attainment of sexual maturity, and maximum size attained by adults of both sexes.

Evans, Llewellyn T. (Research Lab., Jaffrey Center, N. H.) A MOTION PICTURE STUDY OF MATERNAL BEHAVIOR OF THE LIZARD, EUMECES OBSOLETUS BAIRD AND GIRARD. Copeia 1959(2): 103-110, 20 figs. July 1959.

A study of an analysis of a 16-mm film of ♀ skink and eggs taken during and at the close of incubation and for the ensuing 2 weeks. Daily sketches of positions of marked eggs in the nests proved definitely that they were rotated with great regularity throughout the period of incubation.--From auth. summ.

Hensley, Max. (Mich. State U., E. Lansing.) ALBINISM IN NORTH AMERICAN AMPHIBIANS AND REPTILES. Mich. State U., Mus. Biol. Ser. 1(4): 133-159. Jan. 1959.

In all, 87 references to albinism in herps were found in the literature. An additional 96 records, heretofore unreported, were obtained from the return of 65% of more than 200 inquiries made. All available data are given for each specimen.

Klimstra, W. D. (S. Ill. U., Carbondale.) FOODS OF THE RACER, COLUBER CONSTRICTOR, IN SOUTHERN ILLINOIS. Copeia 1959(3): 210-214, 1 fig. Oct. 1959.

Ranking of major food components by volume were: insects (39.1%), mammals (32.9%), amphibians (10.8%) and reptiles (8.3%). By volume Peromyscus (45.3%) and Microtus (19.2%) yielded about 65% of the mammalian portion of the diet. Cottontail rabbit remains were found in only 4 of the 115 samples examined.

Lowe, Charles H., Jr. (U. Ariz., Tucson.) THE SALAMANDERS OF ARIZONA. Trans. Kans. Acad. Sci. 58(2): 237-251, 5 figs. 1955.

Three forms of tiger salamanders inhabit Ariz. Descriptions of these (the total salamander fauna of Ariz.) are presented by photographs and tables of characteristics. Keys are included.

Martof, B. S., and E. F. Thompson, Jr. (U. Ga., Athens.) REPRODUCTIVE BEHAVIOR OF THE CHORUS FROG, PSEUDACRIS NIGRITA. Behaviour 13(3/4): 243-258, illus. 1957. [From Biol. Abst. 33(9).]

Significant events concerning the reproductive behavior of Pseudacris nigrita in their natural breeding areas are fully described. Throughout the breeding season both sexes varied widely in the intensity of their reproductive drives. Field and laboratory experiments emphasized the role of voice as the sole source of stimuli bringing the sexes together.

Milstead, Wm. W. (Texas Tech. Coll., Lubbock.) DRIFT-FENCE TRAPPING OF LIZARDS ON THE BLACK GAP WILDLIFE MANAGEMENT AREA OF SOUTHWESTERN TEXAS. Texas J. Sci. 11(2): 150-157. June 1959.

Eight drift-fence traps and 6 drift fences were operated during the period July 9-26, 1952. During the study 66 lizards of 6 species were captured, marked and released. Forty were recovered at least once for a total of 122 recoveries. The techniques of drift-fence trapping and different methods of marking lizards are explained. Correlations of lizard activity with weather conditions are made. Hourly checks of traps were made from 6 a.m. to 9 p.m.

Parrish, Henry M., and C. B. Pollard. (U. Vt., Burlington.) EFFECTS OF REPEATED POISONOUS SNAKEBITES IN MAN. Am. J. Med. Sci. 237(3), No. 1043. p. 277-286. Mar. 1959.

The effects of repeated snakebites in 14 patients were studied. One patient had 12 different poisonous snakebites, 1 had 10, 2 had 6 and the remaining 10 had 5 or less snakebites. All but 3 of the snakes inflicting these bites were N. A. pit vipers. Five patients had permanent local defects such as atrophy of muscles and amputations of digits following snakebites. There was no clinical or laboratory evidence that permanent immunity to pit viper venom developed. Thirteen of the 14 patients were scratch tested for snake venom allergy. Of these, 4 were found allergic to rattlesnake or moccasin venom, or both. The severity of repeated snakebites in non-allergic patients depends on the characteristics of the individual envenomation and not on the cumulative effects of previous snakebites.--From authors' summ.

Schad, G. A., R. H. Stewart, and F. A. Harrington. (Inst. Parasit., Macdonald Coll. P.O., Quebec.) GEOGRAPHICAL DISTRIBUTION AND VARIATION OF THE SACRAMENTO MOUNTAINS SALAMANDER, ANEIDES HARDII. Can. J. Zool. 37(3): 299-303. June 1959.

Tinkle, Donald W. (Tex. Tech. Coll., Lubbock.) OBSERVATIONS OF REPTILES AND AMPHIBIANS IN A LOUISIANA SWAMP. Am. Midl. Nat. 62(1): 189-205, 1 fig. July 1959.

Ecological study of 30 reptiles and amphibians found in the Sarpy Wildlife Refuge.

Webb, Robert G. (W. Texas State Coll., Canyon.) DESCRIPTION OF A NEW SOFTSHELL TURTLE FROM THE SOUTHEASTERN UNITED STATES. U. Kans. Publ., Mus. Nat. Hist. 11(9): 517-525, 2 pls., 1 fig. Aug. 14, 1959.

Examination of softshell turtles from the se. U. S. discloses the presence of Trionyx muticus calvatus, a subspecies previously undescribed inhabiting the river systems of the Gulf Coast.

FISHES

Everhart, W. Harry. (Me. Dept. Inl. Fisheries & Game, Augusta.) FISHES OF MAINE. Me. Dept. Inl. Fisheries & Game. 94 p., illus. 1958.

This is a complete revision of the 53 p. publication which appeared in 1950. See WR 65: 35. Keys to the families and species of freshwater species are well illustrated with clear line drawings. This edition includes the information gathered since 1950 on Me. fish. Average lengths by age class tables of game fish have been extended in many instances to include 10-year-old fish.

Hubbs, Clark. (U. Texas, Austin.) A CHECKLIST OF TEXAS FRESH-WATER FISHES. Texas Game & Fish Comm., IF Series--No. 3. 1-14 p., 1 map. Revised Dec. 1958.

Families, genera, and species are listed by scientific and common names. Distribution of species is indicated by numbers that refer to regions, which are shown on map.

Scott, W. B., and E. J. Crossman. (Royal Ont. Mus., Toronto, Canada.) THE FRESHWATER FISHES OF NEW BRUNSWICK: A CHECKLIST WITH DISTRIBUTIONAL NOTES. Contrib. ROMZ (Toronto) no. 51. 45 p. + 2 figs. June 20, 1959.

The first comprehensive work of freshwater fishes of New Brunswick since 1900. The freshwater fish fauna (including anadromous and catadromous fishes) recorded to date includes 46 spp. in 18 families.

Shapovalov, Leo, Wm. A. Dill, and Almo J. Cordone. (Calif. Dept. Fish & Game, Sacramento.) A REVISED CHECK LIST OF THE FRESHWATER AND ANADROMOUS FISHES OF CALIFORNIA. Calif. Fish & Game 45(3): 159-180. July 1959.

This revision of the 1950 checklist consists of 110 full spp. of native and established exotic Calif. fishes. Emendations are annotated. There is also a revised supplementary list of 33 exotic spp. which have been unsuccessfully introduced or are of uncertain occurrence.

INVERTEBRATES

Leonard, A. Byron. HANDBOOK OF GASTROPODS IN KANSAS. U. Kans. Mus. Nat. Hist., Misc. Publ. 20. 1-224, 11 pls., 87 figs. Nov. 2, 1959. Paperbound $1.00, cloth $2.00.

This handbook deals with the snails that are presently known to occur in Kansas. The morphology, general distribution, occurrence in Kansas and ecology are given for each species. Keys to the shells of aquatic and terrestrial gastropods are included. Other sections: economic importance, scientific importance, geographical relationships, collection, identification and preservation of gastropods and a glossary of common terms. Aquatic gastropods are commonly eaten by waterfowl, salamanders, turtles, shrews, muskrats and raccoons.

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Manuscript for Wildlife Review 97 was completed February 2, 1960

INT.DUP..D.C.60- 68881